

	Route to	See page
1		
2		
3		
4		
5		
6		

Contractors and Engineers Monthly



Vol. 49, No. 5

MAY, 1952

\$4 a Year, 50 Cents a Copy



Bureau of Reclamation Photo

This cableway, which first saw service in the construction of Boulder Dam, is now on duty at Canyon Ferry Dam (see page 4). The 78-foot head tower has 450 feet of travel and a 223-cubic-yard counterweight block of concrete to prevent it from tipping under its rated load of 25 tons.

• Canyon Ferry Dam

The Missouri River won the first round, but the contractor got even. Pix show concreting—and a gold dredge mucking aggregate. Pages 4, 5.

• Fair Labor Act

Contractors, if you have questions about overtime pay, minimum-wage rates, child labor, turn to page 17.

• Grading in the Granite State

The contractor ran into stubborn rock, boulders, and swamp muck. Moreover, the highway improvement skirts a resort area, so work was off and on. Page 22.

• Evaluates Rubber Roads

Some facts about rubber-asphalt road surfaces, and their performance, are emerging from a test project in Virginia. Story and lab pix on page 28.

• Prestressed Bridge

"Americanized" prestressing speeds erection of a county bridge. Standardized blocks are precast. See page 33.

• Tar Hot-Mix

Tar hot-mix over a gravel base course improves an old turnpike. Page 41.

• Sewage Plant

Bad ground water and a wet spring season were trouble makers. See page 48.

• Stabilized County Roads

Soil stabilization is one answer to the increasing shortage of aggregates. Read what Iowa is trying, page 52.

• Building Construction

Page 59 covers masonry, concrete, and steel work for one-story school.

Insulated precast-concrete wall panels lower costs on a plant. See page 81.

• Air-Base Runway

It took only 60 days to add 1,000 feet of concrete to a runway so jets could use it. Page 65.

• Concrete Paving

Granular subbase limits pumping, and correct shoulder shaping prevents water trapping, says HRB report, page 71.

A hilly accident-ridden road becomes a modern divided highway. Page 92.

• Securing Job Safety

Speakers had some suggestions at the Greater New York Safety Council meeting: job training, regular meetings, and good superintending. See page 74.

• Weed Control

State declares chemical war on roadside weeds. Methods described on page 77.

• Bituminous Maintenance

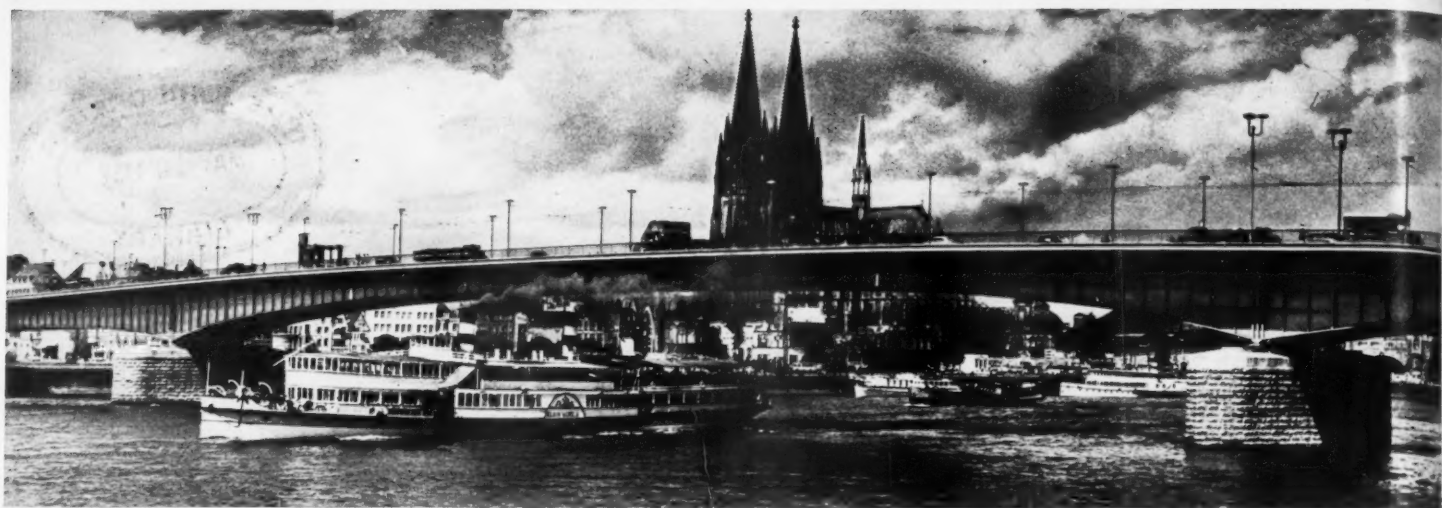
Planer melts and smooths off bumps in old pavement before new bituminous-concrete wearing course laid. Page 99.

• Jacking RC Sewer Pipe

Placement of 3,861 feet of 78-inch sewer pipe called for jacking with hydraulic rams on a storm-water-drainage job. Story on page 102.

(Index to this issue on page 3)

Covering the Field



James F. Lincoln Arc Welding Foundation Photo

This bridge across the Rhine in Cologne, Germany, was designed by Dr. Ing. F. Leonhardt. Replacing one destroyed in the last war, it saved 30 per cent in steel over the old bridge and has a greater capacity. The steel box girders are varied in depth to form shallow parabolic curves. Spans are 404, 605, and 407 feet. The roadway is 38 feet; Sidewalks, 10 feet.

NEWS AND VIEWS

of the construction industry—copper, wages, Federal Aid, toll roads

The materials situation was really looking up—until the steel crisis slowed production. Manly Fleischmann, DPA Administrator, was even talking about "something close to normal rates" of commercial construction by the fourth quarter of this year. Nevertheless, all was not rosy even before the crisis. A. Naughton Lane, President of the Producers' Council, had warned that the present output of B-products is too low to support an expanded program of commercial construction. And the copper problem we have always with us, steel crises or no. For copper, instead of structural steel, now threatens to become the Number 1 limiting factor in construction. Who is to blame for the general mess? Government? Strikers? Steel companies? Wage Stabilization Board? Mother Nature? It gets harder and harder these days to pin the blame for things tidily all on one scapegoat.

Speaking of the Wage Stabilization Board—don't forget it will now approve wage increases for construction workers of as much as 15 cents

an hour over the 10 per cent increase allowed under the old formula. The new policy is effective through next December. But you must get an okay by the Construction Industry Stabilization Commission before making any such wage boosts . . . The Commission has also approved employer contributions of as much as 7½ cents an hour to health and welfare funds. There has been a kick about that, however. See "WSB Welfare Fund" on page 70 of this issue.

A new Federal-Aid highway bill is rollicking around in Congress these days: H. R. 7250. It would authorize \$550 million of Government money a year for roads—\$247.5 million for primary roads, \$165 million for secondary, and \$137.5 million for urban. That makes three bills circulating in all—one for \$400 million, one for \$550 million, and one for \$600 million.

We've been fairly mum the last few months on toll roads—but it was for lack of space, not lack of news. Here are the highlights, west to east. The take on the Denver-Boulder Turnpike in Colorado

is ahead of expectations . . . A bold plan loosed by Oklahoma Governor Murray would connect with toll roads the principal cities of Kansas, Missouri, Oklahoma, and Texas . . .



Ohio hopes to start its toll road in October and get its revenue bonds on sale this month . . . Georgia wants to start its Calhoun to Chattanooga toll road this fall . . . West Virginia seeks an early start for its \$96 million toll road between Charleston and Princeton . . . Pennsylvania will extend its turnpike 33.4 miles to the Delaware River to connect with the New Jersey Turnpike. Probable cost, \$33 million . . . The New York Thruway Authority negotiated a \$60 million loan from a syndicate of 21 banks at an interest rate of 1.1, thanks to the state constitutional amendment adopted last fall, placing state credit behind the agency's borrowing. Money already advanced by the state for Thruway construction thus far will be repaid from bond funds . . . New Jersey finds traffic on its new turnpike already topping the volume expected by 1957; widening, more connecting links, and extensions to existing turnpikes are planned. The State Legislature has also created a new authority within the Highway Department to complete the Garden State Parkway, from North Jersey to Cape May, as a toll road.

Did you happen to see the big play "Business Week" gave to sufficiency ratings in its March 15 issue? (See also "News and Views", March, 1952.) It told how Karl Moscovitz of the BPR devised the grading scheme for roads 10 years ago . . . how Arizona took it up . . . how 21 more states followed suit . . . how, by providing a scientific, statistical measure of highway deficiencies, it clears the air . . . how it can help states get their road programs out of the pork barrel . . . and how it is currently helping the BPR prove its steel needs to the NPA.



When completed late this year, this double-deck viaduct on the Alaskan Way will provide a 2½-mile by-pass of downtown Seattle. The concrete is supplied in mixer bodies on International trucks, and handled by gantry crane.

Contractors and Engineers Monthly

A NATIONAL BUSINESS PAPER

For the

Highway and Heavy-Construction Industry

Issued Monthly by

Buttenheim-Dix Publishing Corp.

Editorial and Business Office:

470 Fourth Ave.

New York 16, N. Y.

Acceptance under the Act of
June 5, 1934, at Philadelphia, Pa.,
authorized March 26, 1945.

William H. Quirk, Eastern Editor

Michael A. Spronck

Catherine J. Hearn

Pauline E. Putnam

Associate Editors

Albert C. Smith, Equipment Editor

Raymond P. Day, West-Coast Contributor

Edgar J. Buttenheim, President

George S. Conover, Vice President

Donald V. Buttenheim, Publisher

Edwin Wagner, Secretary and Treasurer

Myron MacLeod, Advertising Manager

Edgar M. Buttenheim, Asst. Advertising Mgr.*

Edward George Allen, Jr., Promotion Mgr.*

* On leave of absence for military duty.

BRANCH BUSINESS OFFICES

1719 Daily News Bldg.

Chicago 6, Ill.

George S. Conover

Warner H. Robinson

420 Leader Bldg.

Cleveland 14, Ohio

Robert C. Burton

2238 Ben Lomond Drive

Los Angeles 27, Calif.

Albert T. Miller, Pacific Coast Manager

When requesting change of address,
please send old as well as new address.

MAY INDEX

Aggregate Production	4
Air-Base Construction	65
Bituminous Paving	41, 99
Bridge Construction	33
Building Construction	59, 81
Care of Equipment	56, 97
Civil Defense	104
Concrete Paving	65, 71, 92
Convention Calendar	105
County Road Work	52
Dam Construction	4, 5, 46
Distributor Doings	84
Editorial	16
Engineer Shortage	96, 104
Grading	22
Highway Maintenance	77, 99
Labor	17
Legal Decisions	107
Meeting Reports	9, 74
News and Views	2
Parkway Plans	105
Pipe Laying	102
Power Plant	110
Prestressed Concrete	33
Road Bases	52, 71
Roadside Development	77
Rubber-Asphalt Roads	28
Safety	46, 74
Sewage Plant	48
Sewer Construction	102
Stabilized Roads	52
Testing Lab	28

Highway, Bridge Engineers: Civil Service Examination

The United States Civil Service Commission will hold an examination for highway engineers and highway-bridge engineers in order to fill positions in the Bureau of Public Roads and other Federal agencies in Washington, D. C., and throughout the country. The salaries range from \$4,205 to \$5,940 a year. Applications will be accepted until further notice, but applicants are

advised to file as early as possible.

To qualify, applicants must (a) have completed a full college curriculum in professional engineering leading to a bachelor's degree; or (b) have had four years of progressive technical engineering experience; or (c) have had a combination of such education and experience. In addition, they must have had from one to three years of professional engineering experience, part of which must have been in highway or highway-bridge engineering.

Appropriate graduate study may be substituted for two years of experience. No written test is required.

To obtain further information and application forms, apply at a first or second-class post office or a Civil Service regional office, or write directly to the U. S. Civil Service Commission, Washington 25, D. C. Applications must be filed with the Executive Secretary, Board of U. S. Civil Service Examiners, Bureau of Public Roads, Department of Commerce, Washington 25, D. C.

Another major U.S. thoroughfare is paved with Texaco Asphalt



View of the resilient, heavy-duty Texaco Sheet Asphalt pavement constructed on Vine Street by the Union Paving Company of Philadelphia.



This multi-lane thoroughfare is one of the principal traffic arteries of the country's third largest city. Chief reason for its importance is that it serves traffic bound to and from the Delaware River Bridge, which links Philadelphia with Camden, N. J. More than 250,000 vehicles crossed this bridge during a three-day weekend.

The pavement which serves Vine Street traffic is resilient, heavy-duty Sheet Asphalt. Texaco Asphalt was used in the Vine Street pavement—also in the Asphaltic Concrete and Sheet Asphalt paving on the Delaware River Bridge itself.

In Philadelphia and 1500 other representative U. S. communities, Texaco Asphalt paving has demonstrated over and over again its rugged durability and low upkeep cost.

For helpful information on the various types of Asphalt construction suitable for streets, highways and airports, write our nearest office for copies of two booklets on the subject, which will be sent without cost or obligation.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York 17
Boston 16 (20 Providence St.) • Chicago 4 (332 So. Michigan Ave.) • Houston 1 (720 San Jacinto St.)
Jacksonville 2 (Hildebrandt Bldg.) • Denver 1 (910 - 16th St.) • Philadelphia 2 (1411 Walnut St.)
Richmond 19, Va. (Mutual Assurance Society Bldg.) • Minneapolis 3 (Groveland Ave.-Clifton Pl.)



TEXACO ASPHALT



Bureau of Reclamation Photo

Canyon Ferry Dam Shapes Up



Construction photo of the year: a Yuba gold dredge loading "Eucls" with aggregate taken from the riverbed directly above the dam.



The all-new aggregate processing and screening layout is mostly Cedarapids, Conveyco, and Robins. It is high on the left dam abutment.

Gold Dredge Mucks Gravel For Processing by Modern Crushing-Screening Plant

By RAY DAY

• IN mountainous country, close to the headwaters of the mighty Missouri River, Canyon Ferry Dam is steadily taking shape. Canyon Constructors, joint-venture contractor on this Bureau of Reclamation project, was rid of the bad river-diversion problem by November, 1951. From that point the job moved along with better luck. What happened in the early stages makes a man realize what contractors are talking about when they speak of "spreading the risk".

J. C. Maguire of Los Angeles, Calif., sponsor; Griffith Co. of Los Angeles; Brown & Root of Houston, Texas; and Wunderlich Contracting Corp. of Jefferson City, Mo., had the bad luck to lose on a calculated gamble. The first-stage diversion area was wide open in 1950 when the rampaging Big Muddy sliced through the upstream earth cofferdam, beat a hole under the right-abutment diversion flume, undercut the underpinning, and flooded the work area. Valuable time was lost while the damage was repaired and the hole pumped dry.

By late 1951, though, the big concrete dam was rising rapidly, and the first-stage work was out of danger. Bureau of Reclamation officials were hoping that mid-1953 would still see, after all, the completion of the \$30,000,000 project, which was started July 22, 1949. And Canyon Constructors was doing some private schedule searching to find a way to close out the \$11,896,425 contract in the allotted time.

(Continued on page 6)



Bureau of Reclamation Photo

On the Mighty Missouri River

Gravel
Modern
Plant

**Low-Cement-Ratio Concrete Is
Batched, Mixed, and Then
Sent to Pours by Cableway**

(Photo on page 1)

• THE Bureau of Reclamation believes that some of the finest concrete ever placed is going into Canyon Ferry Dam, on the Missouri River near Helena, Mont. Strengths up to 4,100 psi at 90 days have been reported with the general mass mixes containing 180 pounds of cement and 55 pounds of fly ash per cubic yard.

The joker, of course, is time. For the lean mixes contain pozzolan, in addition to regular Type II portland cement, and it often takes quite a while beyond the standard 28-day period for pozzolan to show its effect. The pozzolan used on this project is fly ash, a flue-dust waste product from coal-burning power plants in the vicinity of Chicago. But what it does when properly combined with other ingredients has men like Concrete Engineer W. H. Wisniski wearing satisfied expressions on their faces. One of the principal reasons for employing the fly ash on this project is to help combat alkali reaction with a reactive aggregate.

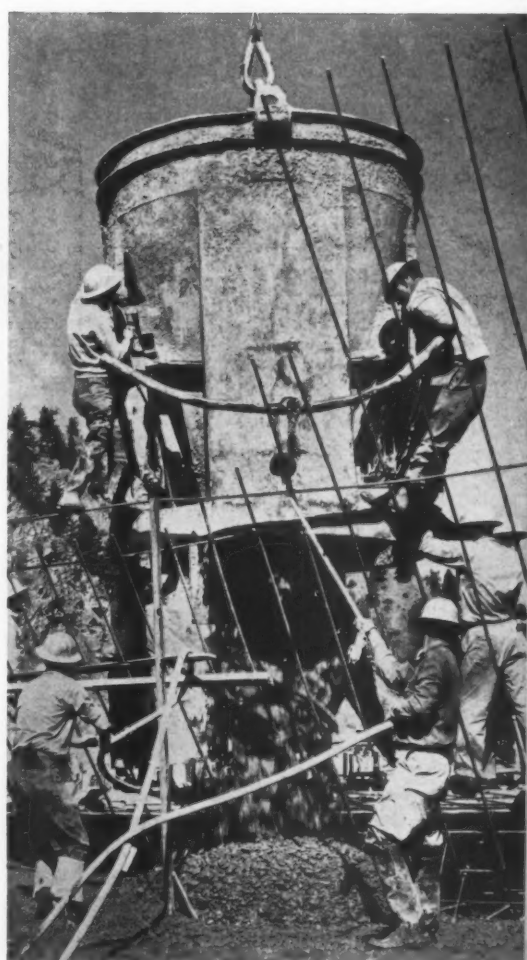
The other ingredients are well graded aggregates, cement, air-entraining agent, and water. Every one is about as important as the fly ash, too, because only the skillful blending of each ingredient has finally eased the traditional battle between the theory boys and the rough, tough guys who have to place the stuff. By using air-entraining agent and pozzolan, with careful control, some mighty harsh mixes are going in with very little kick from the

(Continued on page 10)



Bureau of Reclamation Photo

Also on the left abutment, about 1¼ miles from the aggregate plant, the Johnson batch plant which turns out the several mixes used in the dam.



Bureau of Reclamation Photo

Typical of the lean stiff mixes is this batch dumping from a cableway Gar-Bro 8-yard bucket.

Aggregate Production At Canyon Ferry Dam

(Continued from page 4)

Aggregate Production Red-Hot

Right now, one of the main items of interest is the production of aggregates for the 420,000 cubic yards of concrete in the dam, powerhouse, and appurtenant structures of the 1,000-foot-long, 225-foot-high barrier. Investigations by USBR technicians in 1947 and 1948 led to a scheme of taking these aggregates from the riverbed directly above the dam. The result was one of the oddest construction sights of the year: a gold dredge loading Euclids with raw material direct from its stacker boom!

The aggregate source is known by the general name of "the island deposit" and consists of stream-graded particles of quartzite, sandstone, granite gneiss, diorite, andesite, and dacite, to name a few of the formations. The deposit is about a mile upstream from the new dam site and just downstream from the original Canyon Ferry Dam, built back in the early 1900's by Montana Power Co. and now deserted.

These gravel islands had sufficient silt and topsoil to start heavy growths of cottonwood trees and small brush. Some of the cottonwoods were as big as 12 inches in diameter. In the summer of 1949, desultory clearing work was started, but the soggy stuff, more often than not, failed to burn after it was piled. When the first-stage diversion was turned into the heavy timber flume on the right abutment, a lake backed up to flood some of the aggregate area about 6 feet deep. It covered some of this wood and debris, and this has turned out to be quite a problem. Considerable extra labor is now being used to pick off this objectionable material as the raw gravel passes through crushing and screening plants.

The initial stripping of the dam foundation and construction of some parts of the upstream and downstream cofferdams was done by a Yuba Model 6 gold dredge belonging to Perry & Schroeder Mining Co. of Helena, Mont. (see C. & E. M., Feb., 1950, p. 54). It worked so satisfactorily that arrangements were made for the same machine to recover a large part of the raw aggregate. On December 17, 1949, the dredge, with its gold-recovery apparatus disconnected to make speed, com-



Bureau of Reclamation Photo

This Bucyrus-Erie 54-B dragline worked along with the gold dredge loading aggregates to Euclid hauling units.

menced stockpiling the first aggregates. The initial plan called for methodical stripping of the stockpile area, for actual stockpiling, and for other stripping where necessary. The scheme contemplated the stockpiling of a large U-shaped windrow of raw aggregate at least 40 feet above the water level, and about 400 feet wide. The ends of the U were to butt into the mainland, thus permitting access by truck to the entire area. Secondary loading of this material could then be done by conventional dragline.

This scheme was followed substantially, but a run of favorable low-water conditions made it possible also for the gold dredge to load the "Euclid" direct. Six 13-yard Euclid end-dumps are assigned to the gold dredge. Six 13-yard "Euclid" bottom-dumps haul from a Bucyrus-Erie 54-B dragline, which is equipped with a 2½-yard bucket and 70 feet of boom.

The digging and hauling capacity of these machines is considerably greater (Continued on next page)

FULL LOADS . . . FULL PROFITS



with Firestone TIRES

IT TAKES full loads on your equipment to build bigger profits on the job . . . and you can move full loads without profit-losing downtime on Firestone Off-the-Highway Tires.

There is a specially built Firestone Tire for every off-the-highway job . . . the All Non-Skid for maximum flotation under big loads on free rolling wheels; the Rock Grip for rock work and strip mining with its tough, cut-resisting tread; the All Traction Heavy Duty for on and off-the-highway hauling; the Ground Grip for traction power in dirt or soft going.

Let your Firestone Dealer give you complete information about Firestone Off-the-Highway Tires. Let him show you how to increase your yardage and profits.

WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES
SPECIFY FIRESTONE

Enjoy the Voice of Firestone on radio or television every Monday evening over NBC

Copyright, 1952, The Firestone Tire & Rubber Co.

ATLAS SPEED FORMS

Back of Form



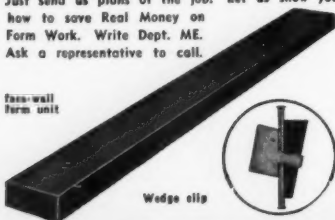
CUT
LABOR
COSTS

Make Big SAVINGS on
Every Poured Concrete Job

SPEED FORMS can be set up, stripped, cleaned, moved and reused in far less time than wood. Lightweight, easy to handle. No heavy bracing needed. No gadgets or special fastenings—Units go together with wedge clips.

Made of Steel—Good for reuse again and again on job after job indefinitely without repair. Reduce material costs way below wood—Many records of 400-500 and more uses. Just send us plans of the job. Let us show you how to save Real Money on Form Work. Write Dept. ME. Ask a representative to call.

Face-wall Form Unit



Wedge clip

IRVINGTON FORM
AND TANK CORP.

20 VESEY ST., NEW YORK 7, N. Y.

ALL NON-SKID

ROCK GRIP

ALL TRACTION

GROUND GRIP

than the placing gang's 150-cubic-yard demand per hour. A healthy stockpile of finished concrete aggregate was thus built up as the "Eucs" scooted back and forth up a ¼-mile hill to dump their loads into the receiving hopper of the aggregate plant.

To provide a raw-aggregate supply during periods when the island deposit is inaccessible—during river flood periods and during later stages of the dam construction—a stockpile is being accumulated at a safe elevation. Material is normally hauled onto this stockpile when the processing plant is not in operation and trucks are freed for this purpose.

All-New Aggregate Setup

The modern screening-crushing plant which reduces and sizes the aggregate is virtually all new, and was assembled for the first time on the Canyon Ferry job.

As the Euclids come in to the plant, they dump their loads over a heavy grizzly, with rails set at 12 inches. Since the naturally graded aggregates contain few oversize rocks, most of the material passes through to a 50-yard feeder hopper.

A plate feeder then puts the material on a 48-inch x 48-foot Conveyco "picking belt" which travels at a speed slow enough for a man—or two if necessary—to remove bits of wood or other debris. The picking belt then discharges over an 8-inch grizzly, which separates as retained material those cobbles which need crushing. Throughs pass by Conveyco conveyors to the main plant, while retained cobbles are routed through a 20 x 36 Cedarapids jaw crusher, about 8 inches open. Throughs from the jaw crusher rejoin the main material supply on the delivery line to the plant.

The sizing units of the plant include a Robins 5 x 12 triple-deck screen, and two Robins 4 x 14 double-deck screens. Mesh on these screens is controlled so that four sizes of aggregate are produced: ¾ to 1½; 1½ to 3; and 3 to 8 inches. Sand is also produced by passing the wash water containing natural fines to a Conveyco double-screw sand classifier. This machine washes the sand and deposits it on a conveyor belt which leads off to the sand-storage area.

The natural sand is exceptionally deficient in No. 16 and No. 30 sizes, however, so some blending is necessary to bring these gradations up. This is done by taking a portion of ¾ to ¾-inch gravel, and routing it through a 5 x 12 Marcy rodmill, which grinds the material down to the required size. The manufactured sand is then discharged over a double-deck vibrating screen, with ¾ and No. 8 mesh on its top and bottom deck, respectively. This screen is in closed circuit with the rodmill. Plus ¾ material can either be routed back through the rodmill or blended with the ¾ to ¾ gravel. It is one of the most valuable controls on



To recover large cobbles from a gold-dredge tailing area, subcontractor Charles Shannon of Butte used this layout of Pioneer and Western storage bins and a 1½-yard Lima dragline on the Canyon Ferry Dam job.

the project—one which has really paid off in convenience and flexibility. Minus No. 8 material is processed and

dewatered in a Conveyco single-screw classifier, and deposited on the blending belt with the natural washed sand.

The entire story of gradation control in the sand can be seen in this typical sampling of material, which was averaged over a long period of many weeks by USBR technicians:

Average Sand Gradings In Per Cent Retained					
Screen Size	Pit-Run Un-washed	Natural Washed	Manufactured Washed	Finished Blended	Spex
No. 4	3	3	0	2	0-5
No. 8	16	15	6	14	5-20
No. 16	8	10	27	13	10-20
No. 30	8	10	27	13	10-30
No. 50	28	36	21	34	15-35
No. 100	25	21	12	19	12-20
Pan	12	5	7	5	3-7
F.M.	2.35	2.56	2.73	2.60	2.60

Material is stockpiled off the end of Conveyco stacker conveyors in large round heaps, centered over a tapping tunnel equipped with control gates. The various sizes of aggregate, when desired, are tapped by these control gates and the rock passes by conveyor to a truck-loading hopper on the left-abutment access roadway. Trucks haul the material from this point to the

(Continued on next page)

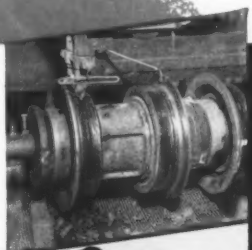
All around the ditcher stoddy hard-facing

Keeps parts in service...
in better operating condition!



● TRACK ROLLS

Stoddy 105 applied automatically makes track rollers as good or better than new—at less cost. Top carrier rolls last longer when hard-faced with Stoddy 1027.



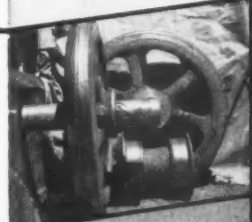
● DITCHER TEETH

All types of ditcher teeth last longer with Stoddy Hard-Facing. Normal life of teeth illustrated was 2800 feet of ditch. Protected with Tube Borium, 17,200 feet had been dug when photo was taken. Estimated total: 40,000 ft.



● IDLERS

are easily restored with Stoddy 105, applied automatically, with longer life, lower cost. Note restoration of smooth, straight tire surfaces.



● CLUTCH BRAKE DRUM

Both these internal and external surfaces were automatically hard-faced with Stoddy 107 then machined to a smooth surface for more wear resistance than new.



● BULL GEARS

Manual hard-facing pressure sides of gear teeth with Stoddy Self-Hardening restores tooth size—at least doubles useful life. Gear teeth can be touched up as required.



NOTE: Whenever you use tractors, cranes, power shovels and other heavy equipment STODDY ALLOYS can cut repair bills. The Stoddy Hard-facing Guide Book shows you how. Ask for copy!

STODDY COMPANY

11936 EAST SLAUSON AVENUE
WHITTIER, CALIFORNIA

AUTOMATIC HARD-FACING is now available
in near-by job shops. Ask for recommended
list of shops.

THE ELLIS PIPE CUTTER is best for cutting large sizes of pipe



Write for circular and price list No. 34CEM on our complete line of pipe cutting tools.

No. 01 Cuts Pipe
4" to 8"

No. 1 Cuts Pipe
4" to 12"

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

Aggregate Production At Canyon Ferry Dam

(Continued from preceding page)

unloading hopper at the mixing plant, about 1¼ miles away. The material is then carried to the bins of the Johnson mixing plant by conveyor, and details of its disposition from that point on are given in the companion article dealing with concrete placing at Canyon Ferry Dam.

According to USBR men and contractor's officials alike, some extremely valuable lessons were learned from the first year's operation of the aggregate-producing setup. First, the recovery of raw stream-bed aggregate by gold dredge is successful. Second, everything would have been even better and fewer man-hours of labor would have been involved if the aggregate site had been thoroughly stripped by draglines, scrapers, or other conventional excavating equipment before the area was flooded. An expensive gyratory crusher



L. P. Sowles, Project Manager for Canyon Constructors, talks over management problems with Contractor Jack Maguire, sponsor of the big contract at Canyon Ferry.

and other equipment for manufacturing sand proved to be unnecessary because of the surplus ¾ to ¾-inch gravel which is available for sand manufacture and which does not need precrushing

As a matter of fact, the shortage of 3 to 8-inch cobbles became so acute that a small subcontract has been let to Charles Shannon Construction Co. of Butte to recover extra material of that

size from a gold-dredge tailings area below the new dam site. Some shortages of 1½ to 3-inch gravel is also becoming apparent. Shannon is using a 1¼-yard Lima dragline to dig the raw material, which is then dumped to a Western Iron Works receiving hopper. A reciprocating feeder puts it on a Pioneer inclined conveyor, which in turn deposits it on the vibrating deck of a 3 x 10-foot horizontal screen of 1¼-mesh. The plus 1½-inch gravel which is retained goes to a pair of 21-yard Pioneer surge bins, and a fleet of dump trucks then hauls the valuable cobbles up to the aggregate plant.

Excess undersize material from this operation is used for fishing, among other things. This is a new technique. The operator of a D8, with a U-type dozer blade, shoves the material out of the way in such a manner that he's always got a fair neck of open water to choke off. When the pond has been choked off, the operator gradually fills it in until all the fish thus trapped are forced to a small area. School stops for a few minutes, and somebody eats trout, bass, carp, or perch that night. The ostensible reason for using the dozer, of course, is to make a neat fill, move the waste material away from the plant, and leave the area pleasing to the eye.

First Project Dam in State

Canyon Ferry Dam is the first major unit of the Missouri River Basin Project to be placed under construction by the USBR in Montana. Canyon Ferry Unit consists of the dam, reservoir, and powerhouse. The reservoir will extend upstream from the dam site for about 25 miles to near Townsend, county seat of Broadwater County, Mont.

The unit is a multiple-purpose development, planned for the control of floods, regulation of the flow of the Upper Missouri River, and generation of electric power. Conservation and control of now unused floodwaters in Canyon Ferry Reservoir will permit the irrigation of approximately 310,000 acres of new land and will supplement the supply to 196,000 acres more, all in the Missouri River Basin upstream from Fort Benton. The dam and reservoir are the key to future water-resource development in the upper basin of the great river.

Flood and other unappropriated waters from a drainage area of 15,860 square miles will be stored in the reservoir, which will have a capacity of about 2,050,000 acre-feet. Canyon Ferry is a "natural" for a dam site, and negotiations with the Montana Power Co. for the abandonment of the original dam, now over 50 years old, have produced an immense reservoir for the amount of concrete involved.

USBR plans for the power plant call for an installed capacity of 50,000 kw, in three identical generating units, for the production of prime and secondary energy averaging from 285,000,000 to 320,000,000 kilowatt-hours annually.

The dam is a concrete gravity structure, with a height of 225 feet from bedrock, or 173.5 feet above the old stream bed. About 355,000 cubic yards of concrete will go into the dam, and about 65,000 cubic yards will be needed for the powerhouse, spillway apron and walls, trash racks, and other such

(Concluded on next page)



**DOMOR MOVES
2652
YARDS
IN 8 HOURS**

... on Folsom Dam Project!

Domor production is fast and steady. The unit shown is equipped for night work with generator and lighting equipment . . . is one of two working on the project.

D & H CONSTRUCTION CO. AND M. H. HASLER CONSTRUCTION CO. SPEED WORK - SCHEDULES WITH DOMOR ELEVATING GRADERS

Taking a 26"-cut, this Domor Elevating Grader loaded 12-heaped yards of hard, red clay and decomposed granite in 0.85 minutes . . . 2652 cubic yards in one, 8-hour shift! The Domor-No. 12 Motor Grader team is one of two working on the Folsom (Calif.) Dam Project of D & H and M. H. Hasler Construction Cos.

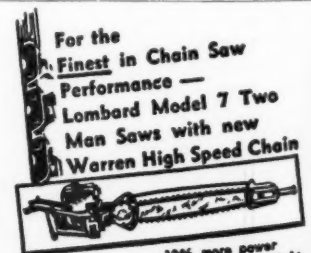
The one man at the Domor controls loaded 30% more than by previous methods . . . yet spent as high as 15 minutes each hour waiting for hauling units.

You can use this low-cost, high-production loading tool on your job, too . . . and your Domor-"Caterpillar" Dealer can show you how. Let him give you full details on the Domor Elevating Grader—today!

Your present "Caterpillar" No. 12 or 112 Motor Grader can be easily equipped with a Domor Elevating Grader. Ask your "Caterpillar" Dealer for complete information.



ULRICH PRODUCTS CORPORATION
ROANOKE, ILLINOIS



Dept. 7
LOMBARD GOVERNOR CORP.
ASHLAND, MASSACHUSETTS

structures. The county road which formerly crossed a rickety bridge a short distance upstream, and which now passes over a temporary construction bridge immediately downstream from the new dam site, will soon be routed over the top of the new dam.

Last November the river was diverted through two diversion tubes and a low monolith while the right-abutment work got under way. The 22,000-cfs flume which carried the river more or less successfully was scrapped, and the bedrock at the right abutment exposed. The initial pressure grouting is finished, and work on the right-abutment concrete is going forward rapidly. There is only one disadvantage: it is a longer cableway distance across the valley to this part of the structure.

Personnel

For Canyon Constructors, L. P. Sowles is Project Manager; Joseph A. Shirley is Acting General Superintendent; A. L. Wooten is Assistant Superintendent; Butler Howell is Carpenter Superintendent; Claude C. Sheppard is Rigging Foreman; Roy Gerths is Master Mechanic.

L. N. McClellan, Chief Engineer of the Bureau of Reclamation, heads the USBR forces. Kenneth F. Vernon is Regional Director of Region 6 at Billings, Mont., and H. E. Aldrich heads the Upper Missouri District at Great Falls. William P. Price, Jr., is Construction Engineer in the field, assisted by Field Engineer Gordon Manly, Office Engineer Preston M. Schwartz, Chief Inspector Bryon David, and Concrete Engineer W. H. Wisniski.

Conveyor Attachment For Bulk Materials

A bulk-materials attachment for the Brik-Toter, portable masonry-materials conveyor, is announced by Mar-Rail Conveyor Co., 560 York Ave., Pawtucket, R. I. Installed in a matter of minutes, hopper and side guards permit the conveyor to carry sand, gravel, and similar bulk materials. The conveyor can be used for trench excavations or loading trucks.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 880.

Unusual Surveying Problems

"The Surveyor's Notebook", a collection of short articles on unusual surveying problems and their solutions, has been published by W. & L. E. Gurley, Troy, N. Y. The stories, which originally appeared in engineering journals, relate how unusual field problems were solved by the ingenuity of the surveyor or engineer.

The first page in "The Surveyor's Notebook" tells how one surveyor helped lay an oil pipeline in record time by using a few tricks of the trade. In another, a county surveyor from Nebraska gives his method for determining a quarter-section line when it is completely blocked by railroad cars. Another story explains how a Massachusetts survey party used captive pilot balloons to get initial lines between stakes separated by heavy timber, while others outline ways to improve land survey records and the advantages of solar transit.

Among the surveying tips are a remedy for frozen tripods and a method for leveling over corn 10 feet high. Unusual stories in the collection include the problems of surveying in the Arctic; unique transit practices of the Corps of Engineers in obtaining the first accurate survey of the Niagara River bed; use of transits and levels inside an aircraft plant; and how transits measured movement of a bell tower.

Free copies of "The Surveyor's Notebook" may be obtained by writing the company. Or use the Request Card at page 16. Circle No. 928.

Michigan Road Builders' Association Meets, Elects

At its 24th Annual Meeting held in Detroit, April 2 and 3, the Michigan Road Builders' Association elected the following officers for the coming year: President, Carl Goodwin of Carl Goodwin & Sons, Allegan; Vice President, C. Edward Frisinger of Lewis & Frisinger Co., Ann Arbor; Secretary-Treasurer, E. I. Cross of Gould & Cross, Grand Rapids; Upper Peninsula Vice President, Romeo Lawrence of I. L. Whitehead Co., Sault Ste. Marie. Mr. Goodwin succeeds retiring President L. A. Davidson, general contractor of Lansing, who becomes a member of the Board of Advisory Directors.

At the Annual Banquet held in the

Statler Hotel, Charles M. Ziegler, Commissioner of the Michigan State Highway Department, delivered an address to the members.

Dewey & Almy Executives

As a result of recent elections at Dewey & Almy Chemical Co., Cambridge, Mass., T. T. Miller is Vice President-Marketing, and George W. Blackwood is Vice President-General Sales Manager. Mr. Miller had been Vice President-Sales for several years prior to his present appointment. Mr. Blackwood, who has been General Sales Manager for two years, will be responsible for sales in the company's adhesives and coatings, and construction specialties, among other items.

Hard-Surfacing Materials

A catalog entitled "What Hard-Surfacing Can Do for You" is available from Rankin Mfg. Co., 3072 W. Pico Blvd., Los Angeles 6, Calif. A section giving general information on Ranite hard-surfacing materials indicates the savings to be effected by the use of hard-surfacing over the cost of machinery parts replacement. The catalog also covers recommended application procedures, rod selection, amperages, speed, heat control, and proper rod grip. It tabulates sizes, characteristics, quality, and the Rockwell hardness of the complete Ranite line.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 955.

Flood control levee gets a lift from "Caterpillar" power



BUILDING a 13-mile section of flood control levee in the Florida Everglades, Hooper Construction Company of Coral Gables relies heavily on "Caterpillar" equipment. A D17000 Engine powers the Link-Belt Speeder 2 1/2-yard Dragline. A D8 Tractor with No. 8S Dozer works with the dragline. And two D13000 Engines with two Gardner-Denver 500-foot compressors on tracks, pulled by a D6 Tractor, provide the blast hole power for shooting coral rock. In all, Hooper's "Caterpillar" lineup includes 12 tractors, 5 motor graders and several engines.

On this project, holes are drilled 14 feet deep and shot 72 at a time, each shot loosening about 30 cu. yds. of coral. 260,000 cu. yds. are excavated a month.

The resulting canal is 75 feet wide and 14 feet deep.

Like Hooper, many other contractors have found that it pays to standardize on "Caterpillar" units. They are engineered for steady performance with a minimum of down-time. As sturdy as they are, they'll do even more work at lower cost if given good care. You don't have to coddle them — proper maintenance takes only a few minutes a day. And remember, your nearby "Caterpillar" Dealer has the facilities for specialized service — any time you need it, call on him!

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

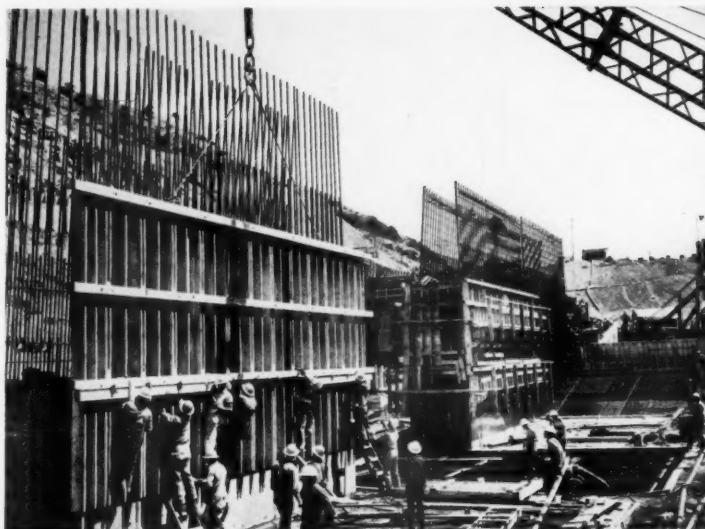
Concreting Methods At Canyon Ferry Dam

(Continued from page 5)

placing crews.

Not all the mixes are as lean as the 180-pound-cement and 55-pound-fly-ash mixture. These others are reserved for the interior of the dam, and are called C mixes. The variety of mixes is such that they grade all the way up to AA, to be used on exteriors extra severely weathered.

But in every case the mixes containing the largest possible size of aggregates are used. They result, Bureau men believe, in maximum durability, least volume change, less heat generation, and greater economy. The larger-sized maximum aggregate mixes contain appreciably less water, cement, sand, and fly ash. Naturally, that's good. For the most economical and satisfactory concrete in any category, these items must be kept to a minimum consistent with good workmanship.



Bureau of Reclamation Photo

Heavy panels to hold the concrete are lifted into place and anchored.

Hammering Down H-PILES for New-Design Canadian Bridge

A new bridge across the Stave River in British Columbia is the first of its type in the world. This steel-truss structure is carried on piers and abutments of steel H-pile and Prepak-concrete design, which results in less construction time and lower costs than by conventional methods. Naturally, the contractor selected a McKiernan-Terry Double-Acting 9-B-type hammer to drive the vital H-piles.

Samples taken below the river bottom indicated that pile driving conditions were not ideal. Piles had to be hammered to refusal in silt and varying layers of coarse and fine sand. The McKiernan-Terry hammer, however, quickly drove 75-ft batter piles to desired penetration—with the piles projecting up into the Prepak-concrete.

No matter what your pile driving job, you can count on the power and dependability of McKiernan-Terry pile hammers and extractors. Complete McKiernan-Terry line includes 16 sizes of hammers and 2 sizes of extractors. Write for bulletin, giving full details.

Other McKiernan-Terry Products



MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES

Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.



GRAB BUCKETS

Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.



HONING UP TO

42-IN. I.D. X 35-FT. LONG Typical of the extensive facilities of McKiernan-Terry for unusual jobs.

McKERNAN TERRY

McKiernan-Terry Double-Acting 9-B-type Pile Hammer driving batter piles for the Stave River bridge in British Columbia. Northern Construction Company & J. W. Stewart Limited was the contractor.

McKERNAN-TERRY CORPORATION • MANUFACTURING ENGINEERS • 19 PARK ROW, NEW YORK 38, N. Y.
Plants: Harrison, N. J. and Dover, N. J.

Materials Meet at Batcher

All concrete materials meet at a big Johnson batching plant set high on the left abutment. Sand and four sizes of gravel come from the screening and crushing plant described in the companion article. Pozzolan, or fly ash, comes from Combustion By-Products Co. of Chicago. Bureau men are trying now to get shipments of this material for one dam all furnished from the same source, because it makes for more convenient control, in their opinion.

The fly ash comes in to the railroad siding at Louisville, Mont., about 9 1/2 miles from the dam, in hopper-bottom cars. It is much trickier to handle than cement. It's hard to get started flowing, and hell to stop once it starts, because it wants to run like water. The dust problem is also more severe. There are two storage silos for this material at Louisville, holding 405 and 137 tons respectively. The two fly-ash silos at the batch plant hold 557 and 17.4 tons. Trucks hauling the material to the dam can average about 10.5 tons per trip.

The cement is Type II and is shipped in bulk from Ideal Cement Co.'s plant at Trident, Mont., about 64 miles from Louisville. It is unloaded from hopper-bottom cars by gravity to a track hopper, sent by screw to a bucket elevator, and stored for trans-shipment in two silos. The larger Louisville silo holds 3,095 barrels, while the other smaller Johnson silo takes 600 barrels. International trucks equipped with metal covers and doors load by gravity from the large silo. They deliver the material to 2,507 and 220-barrel silos at the plant.

The air-entraining agent is Protex, and mixing water comes from the Missouri River.

So far as the mixing plant is concerned, it is the same Johnson fully automatic plant which was used in the construction of the Bureau's Angosture Dam near Hot Springs, S. Dak. Its concrete capacity has been increased by adding another 2-yard Koehring tilting-bowl mixer, making 4 in all. The plant includes, in addition to the mixers, an electrically controlled air-operated batching system, an automatic autographic recording system with 14 movable pens, and a selector system whereby any one of 12 various mixes can be batched merely by flicking the selector position. Concrete-ingredient weights are transmitted to the dials by scale beams, except for air-entraining agent, pozzolan, and water, which are sent by wires.

The plant has 5 levels. The top floor has an arrangement for the final screening of gravel. This is usual USBR custom: because of breakage and inadvertent mixing, sized aggregate is always re-sized finally as it enters the batch plant.

On the floor directly below the screens are storage bins for the various sizes of material: aggregates, cement,

(Continued on next page)

WON'T QUIT or cause time out



A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

The Hayward Company
32-36 Dey Street
New York, N.Y.

Hayward Buckets



Bureau of Reclamation Photo

A technician adjusts a pen of the autographic recording system in Canyon Constructors' Johnson concrete plant.

pozzolan. The third level includes the weighing apparatus and the control room. On the next floor the mixers are mounted; they discharge into a receiving or wet hopper. Concrete from this hopper is discharged into 8-yard Gar-Bro concrete buckets through a pneumatically operated gate. The 8-yard buckets are carried to the cableway pickup point on a specially designed car drawn by a Plymouth locomotive.

So accurate is the batching that cement, pozzolan, and water are "finalled" in manually after the automatic weighing mechanism slaps in a close approximation. Aggregates are normally weighed entirely automatically.

Boulder Cableway

Concrete is carried to its point of placement at Canyon Ferry Dam by a cableway which first saw service in the construction of the Bureau of Reclamation's Boulder Dam. It is composed of a 78-foot head tower with 450 feet of travel, a pivot anchored in solid rock on the far side of the canyon, and its operating cables. The pivot end has a knuckle joint from one of the old Shasta Dam head-tower connections. There are 223 cubic yards of concrete in the counterweight block of the head tower to prevent it from tipping under its rated load of 25 tons.

The main gut across the 1,384-foot gorge is a Leschen 6 x 67 cable, with a wire-rope center. Load lines are 7/8-inch 6 x 19 regular-lay. The endless or conveying line is a 1 1/8-inch 6 x 30 Type G patented flattened-strand cable.

The cableway can reach every part of the dam with the possible exception of a small part of one corner of the powerhouse, one corner of block No. 10, and the spillway apron. This concrete can be reached by crane.

The 8-yard Gar-Bro buckets carrying the concrete are dumped by an air

charge. The 5-foot dam lifts are usually placed in three courses, stair-stepping each as close as possible until the forms are filled. Pneumatic vibrators were replaced by Chicago Pneumatic 5190 electric vibrators, which were more powerful, quieter, and met the 7,000-impulse USBR requirement with room to spare.

The routine lift forms are Blaw-Knox cantilevered steel sections, coming partly from Angostura and partly from Bull Shoals Dam in Arkansas. These are raised by small winches and A-frames, and anchored by heavy 1 1/4-inch steel bolts to Richmond screw ties embedded in the previous concrete lift. Hairpins and tie-down rods are often used, especially at corners.

All odd forming aside from conventional lifts is done by wood panels, anchored and tied by heavy form bolts. Many of the walls are so high and inaccessible that almost every wooden form has to be engineered and calculated for strength. Often the wales are



Bureau of Reclamation Photo

This Chicago Pneumatic electric vibrator was the type which worked most successfully on the heavy concrete at Canyon Ferry Dam.

6 x 8, with heavy studs on close centers. Wood forms are usually faced with plywood. A carpenter yard beyond the

administrative area below the dam contains all the power equipment necessary. (Continued on next page)

ANOTHER NEW 4 WHEEL DRIVE PAYLOADER



MODEL HR
1 CU. YD. CAPACITY

FEATURING . . .

- 4-wheel drive
- Rear-wheel Power Steering
- Four Forward Speeds
- Four Higher Reverse Speeds
- Hydraulic Bucket Control
- Hydraulic Down-pressure
- Automatic Tip-back Bucket



Write for

literature on the 4-wheel drive 1 cu. yd. Model HR or 1 1/2 cu. yd. Model HM "PAYLOADER." There are also five sizes of two-wheel drive "PAYLOADERS" — 1 1/4 yd., 3/4 yd., 1/2 yd., 15 cu. ft., 12 cu. ft.

Here's the tremendous tractive ability, the mobility and the versatility of the famous Model HM "PAYLOADER" applied to this new 1 cu. yd. tractor shovel. Here's the same low, compact design . . . the same power-booster rear wheel steering that means maximum maneuverability. And — once again — here's more than thirty years of tractor-shovel experience built into a single machine.

The Model HR conquers sand, snow and mud . . . works on pavement without injuring the surface . . . travels fast from job to job. It can dig tough materials, load big trucks, bulldoze, strip, excavate, stockpile, spread, lift, push and do drawbar work. There's a choice of 60 hp Diesel or 54 hp gasoline engine . . . extra attachments include bulldozer, crane hook, fork lift and snow plows.

If you want to know how much usefulness, mobility and all-around job capacity can be packed into a one-cu. yd. tractor-shovel, you have to see a Model HR "PAYLOADER" in action. Contact your Hough Distributor today. The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Illinois.



PAYLOADER

THE FRANK G. HOUGH CO.

Since 1920



Bureau of Reclamation Photo

An air-water blast from a jet pipe left this concrete surface in condition to receive the next lift. That's a cooling pipe above. Embedded in the concrete later on, it will carry circulating cooling water to dissipate the heat of cement hydration.

Concreting Methods At Canyon Ferry Dam

(Continued from preceding page)

sary to fabricate the panels. The cable-way is often used to erect these heavy forms. The toughest ones to build, and check, were the draft-tube forms, which had to fit to extremely close tolerance.

Placed concrete is cured by water. Aside from a system of cooling pipes embedded in the mass, along with specifications which prohibit placing temperatures over 80 degrees, no special cooling requirements are observed.

Cold-Weather Problems

In the 1950 working season, trying desperately to carry some of the concrete activity over through the early winter months, Canyon Constructors ran into a heating problem. Outside temperatures dropped to subzero. A boilerhouse with four Lucey steam boilers totaling 630 horsepower generated steam which was sent through lines to the job. The upstream and downstream faces of the dam were covered by canvas tarpaulins, and so were some of the contraction joints. Live steam went under the canvas to prevent the concrete surface from freezing. Steam was also used to keep the dewatering pumps operative, and to heat mixing water and aggregates.

Many Mixes

The many mixes used on the project include four general types: AA, A, B, and C. For each mix, with the exception of those in the AA category and the $\frac{3}{4}$ -inch-maximum aggregates and grout, a special extra-workability mix is provided. The extra-workability mixes have a higher sand, water, cement, and fly-ash content than the normal mix. A $\frac{1}{2}$ -inch increase in slump is also allowed. They are inferior to normal mixes, however, and are used only for special circumstances.

The whole intent of the extra-workability mixes is to make maximum use of the mixes with larger-sized aggregate. For example, in a restricted location where it is not practicable to use 8-inch-maximum aggregate in a normal mix because of its limited workability, and where formerly a 3-inch-maximum-aggregate mix would be used, the job could be satisfactorily bulled through by using the 8-inch extra-workability mix. Even though the extra-workability mix is inferior to the normal mix, it is still superior to and more economical than, say, the 3-inch-maximum-aggregate mix.

The AA-type mixes are extra rich ($w/c + P$ of 0.45 ± 0.02) and are designed for areas subject to especially severe weathering. The climate in this part of the country is rather severe, and structures require special protection against freezing and thawing action. Structures or portions of structures included in this classification would be as follows:

1. Spillway and spillway apron, outer 5 feet, elevation 3,635 to elevation 3,655; or the area within the fluctuating water lines and subject to wave action.
2. Training and retaining walls, elevation 3,635 to 3,660.
3. Left retaining-wall parapet.
4. Exterior exposed portions of powerhouse from elevation 3,635 to 3,655.
5. Powerhouse parapet walls.
6. Spillway bridge piers.
7. Roadway, bridge, and parapet walls at top of dam.
8. Trash-rack columns and beams.
9. Outer 5 feet of right and left training walls above elevation 3,660 on dam proper.

In general, the AA mixes are mixed with as low a slump as possible, with at least the maximum amount of en-



Bureau of Reclamation Photo

Live steam circulates under this canvas cover to protect dam concrete during cold-weather pours. The boiler house is on the hill in the background.

trained air. It is difficult to entrain air in the rich mixes when they have a low slump, so the maximum prescribed air content is not apt to be exceeded.

The A mixes are designed for general exterior construction and for all exterior areas other than the severely weathered portions requiring AA concrete. Included in the A category are the outer 5 feet of the spillway and apron from elevation 3,600 to 3,635 and from 3,655 to the top; intermediate training wall and right and left retaining walls from elevation 3,600 to 3,635; the right and left training walls about elevation 3,600, except the outer 5-foot portion; the powerhouse exterior exposed walls above elevation 3,655; and the upstream face of the dam above elevation 3,765 and portions below that level where extra strength is advisable.

The B mixes are designed for general interior unexposed construction except for the general, lean, mass, interior or C concrete. There are no C mixes for anything but 8-inch-maxi-

(Concluded on next page)

"TEXACO URSA OIL X** OUR DAM WORK



Construction equipment, lubricated and fueled with Texaco, at work on the Morganza embankment, part of the flood control program on the lower Mississippi. Joint contractors are Edward E. Morgan Co., Inc., and Jones & Gillis, Inc. Dirt-moving operations, started in June, 1949, call for placing 3,985,000 cubic yards of semicompacted embankment. Equipment includes 4 draglines, 9 tractors and 53 trucks — all of which are lubricated with Texaco exclusively.

H EAVY rains slowed early stages of placing nearly four million cubic yards of embankment for the Morganza Control Structure. Construction machinery was idled for days at a time. This made it vital that, when work could be resumed, there be no delays due to equipment failure.

"Diesel engines in all our earth-movers," report the contractors, "were lubricated with *Texaco Ursa Oil X***. They ran perfectly even under the severe conditions often imposed. We found, on this as on other jobs, that *Texaco Ursa Oil X*** is a big help

TUNE IN . . . TEXACO
STAR THEATER
starring MILTON BERLE
on television
every Tuesday night.
See newspaper for
time and station.



TEXACO

tain air
have a
scribed
ceded.
r gen-
for all
everely
A con-
ry are
ay and
35 and
mediate
retain-
3,635;
about
5-foot
or ex-
55; and
above
ow that
visable.
r gen-
struction
s, inte-
e no C
-maxi-

imum aggregate, so all interior mixes of 3-inch-maximum or smaller aggregate come under the B classification. B concrete of 8-inch-maximum aggregate is also used on the outer 5 feet of the upstream face of the dam permanently under water or below elevation 3,765.

A tabulation of cement, fly ash, water, and sand weights for several of the mixes is given on this page.

A fully equipped laboratory is maintained in the field. Routine tests include sieve analyses, slump tests, air-entrainment analyses, and compressive-strength tests. The lab has a curing room for test cylinders, and a cylinder-breaking machine. The more complicated tests such as alkali reaction, rock soundness, and so on are usually sent to the Bureau laboratory in Federal Center, Denver, Colo.

In spite of the lean mixes, and in spite of the large sizes of aggregate used, exterior surfaces are stripping out beautifully with a minimum of bug holes or other defects. The interior

Canyon Ferry Concrete Mixes

Lab. Mix No.	Max. Agg.	Contents per cu. yd. (lbs.)						% Sand	Max. Slump
		W/C+P	Cement	Fly Ash	Cemt. F.A.	Water			
AA Concrete (Exterior, extra severely weathered)									
E-6-6-e	8"	0.45 ± .02	258	86	344	158	21	2	
E-3-7-g	3"	0.45 ± .02	287	95	382	180	24	2	
E-1-1/4-a	1 1/2"	0.45 ± .02	380	126	506	228	30	2 1/2	
E-3/4-5	3/4"	0.45 ± .02	412	137	549	253	38	2 1/2	
AA Grout	Grout	0.45 ± .02	704	235	939	431	Grout	8	
A Concrete (Exterior, general construction)									
E-6-7-e	8"	0.50 ± .02	245	82	327	164	21	2	
E-6-9-e(EW)	8"	0.50 ± .02	260	87	347	174	24	2 1/2	
E-3-3-g	3"	0.50 ± .02	275	92	367	184	24	2 1/2	
E-3-9-g(EW)	3"	0.50 ± .02	291	97	388	199	27	3	
E-1-1 1/2-a	1 1/2"	0.50 ± .02	345	115	460	230	30	3	
E-1-1 1/2-9-a(EW)	1 1/2"	0.50 ± .02	361	121	482	241	33	3 1/2	
E-3/4-1	3/4"	0.50 ± .02	397	132	529	265	38	3	
A Grout	Grout	0.50 ± .02	667	223	890	447	Grout	8	
B Concrete									
(Interior, general construction except general interior mass or C mix)									
I-6-2-e	8"	0.55 ± .02	188	90	278	153	22	2	
I-6-9-e(EW)	8"	0.55 ± .02	200	96	296	163	25	2 1/2	
I-3-3-g	3"	0.55 ± .02	248	82	330	182	25	2 1/2	
I-3-9-g(EW)	3"	0.55 ± .02	261	87	348	191	28	3	
I-1-1 1/2-a	1 1/2"	0.55 ± .02	310	104	414	228	31	3	
I-1 1/2-9-a(EW)	1 1/2"	0.55 ± .02	325	109	434	239	34	3 1/2	
I-3/4-1	3/4"	0.55 ± .02	357	119	476	262	40	3	
B Grout	Grout	0.55 ± .02	518	248	766	421	Grout	8	
C Concrete (General interior mass mix)									
I-6-5-e	8"	0.65 ± .02	180	55	235	155	22	2	
I-6-8-e(EW)	8"	0.65 ± .02	191	59	250	166	25	2 1/2	
C Grout	Grout	0.65 ± .02	506	155	661	436	Grout	8	

Note: There are no C mixes for any concrete other than 8" max. agg. All 3" or smaller max. agg. interior mixes will come under the B category.

of the mass is just as pretty, because the big Gar-Bro buckets dump with minimum of segregation. What there is, is handled by the concrete gang, as men spread the few large segregated cobbles around.

Canyon Ferry Dam is a good example of nominal concrete control which results in better placing speed now for the contractors handling the material, and which is expected to pay off in longer-lived masonry and less maintenance in years to come.

Virginia Highway Department Makes Personnel Changes

John J. Forrer has resigned as Assistant Chief Engineer of the Virginia Department of Highways, to become Executive Director of the Virginia Asphalt Association, Inc., a new organization with headquarters in the Hotel John Marshall, Richmond. Mr. Forrer, who had been Assistant Chief Engineer since last October, joined the Virginia Department of Highways in 1917. His wide knowledge of bituminous materials and their use in stabilizing local soil, sand, and gravel brought him national and international repute.

As a result of Mr. Forrer's resignation, the Department announces the following promotions: Lewis E. Akers, former Secondary Roads Engineer, succeeds Mr. Forrer as one of the Department's two Assistant Chief Engineers; Samuel D. Crute, Staunton District Engineer, becomes Secondary Roads Engineer; Gilbert D. Grey, Tazewell Resident Engineer, takes Mr. Crute's place as Staunton District Engineer; and William F. Robinson, Assistant Resident Engineer at Norfolk, becomes Resident Engineer at Tazewell.

Mr. Akers, who has been with the Department since 1922, has long experience of road problems, one of his former jobs being to administer the 39,000-mile Virginia secondary-roads system adopted in 1943. In his new role he will serve with Burton Marye, Jr., the other Assistant Chief Engineer. They will share joint supervision over the ten major offices of the Engineering Division. Mr. Akers will take maintenance, secondary roads, equipment, tests, cost analysis, and the clearance of research-project requests; Mr. Marye takes care of location and design, construction, bridges, urban work, landscape, and the engineering part of Revenue Bond Act projects.

Mr. Crute has been with the Department for over 29 years; and Mr. Grey and Mr. Robinson have each some 20 years in the Department to their credit.

Euclid Advances Three

Three personnel promotions have taken place in the Sales and Service Departments of The Euclid Road Machinery Co., Cleveland, Ohio.

John E. Ehlert, formerly Service & Parts Manager, is Assistant Domestic Sales Manager; G. M. Perry, who has been working recently in the Sales Development Department, succeeds Mr. Ehlert as Service Manager; and George W. Cunniff is District Manager for the northeast territory, which includes Massachusetts, Rhode Island, New Hampshire, Maine, Vermont, and the Maritime Provinces of Canada.

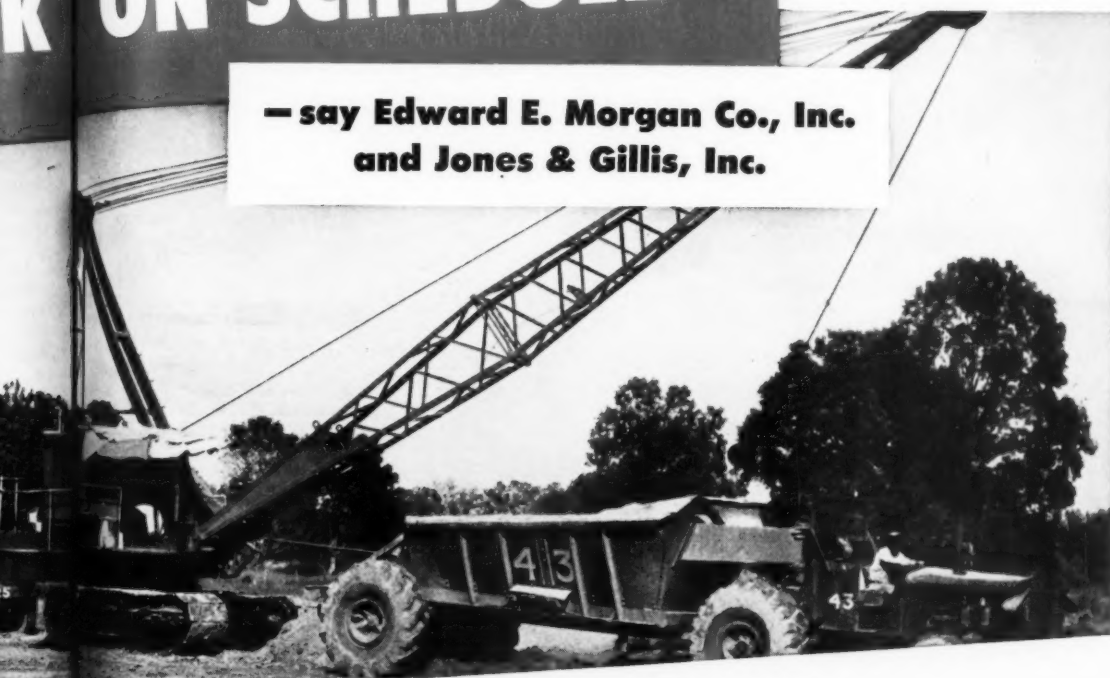
Info on Electric Plants

A 4-page catalog on electric plants has been prepared by Winpower Mfg. Co., Newton, Iowa. The G-line it describes is available in 300, 600, and 1,000-watt capacities with Briggs & Stratton engines, and in 1,500, 3,000, and 10,000-watt sizes powered by Wisconsin engines. The catalog contains illustrations and complete specifications on ac and dc models.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 941.

HELPS US KEEP ON SCHEDULE"

— say Edward E. Morgan Co., Inc.
and Jones & Gillis, Inc.



in reducing fuel consumption and keeping maintenance costs low."

Texaco Ursa Oil X** cleans as it lubricates. Its fully detergent and dispersive properties keep harmful carbon, sludge and gum from forming. Better compression and combustion result, wear is reduced, bearings are protected against corrosion. Engines run better; parts last longer.

Let a Texaco Lubrication Engineer tell you more about Texaco Ursa Oil X** and how you can reduce your costs with the Texaco Simplified Lubrication Plan. Just call the nearest of the more than

2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Make Savings Here, Too—Chassis parts last longer when protected by Texaco Marfak. This super-tough lubricant guards against wear and rust in the most severe service. More than 400 million pounds of Marfak have been sold.

Wheel bearing maintenance cost is less when you use Texaco Marfak Heavy Duty. It seals itself in, seals out dirt and moisture. No seasonal change required.

Crawler track bearings give long, trouble-free service when lubricated with Texaco Track Roll Lubricant. Protects against wear, dirt and moisture.

Lubricants and Fuels

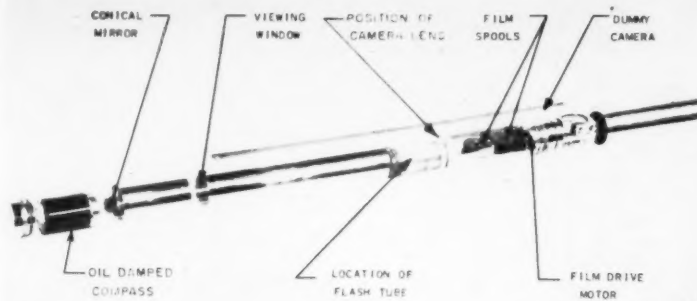
FOR ALL CONTRACTORS' EQUIPMENT



New Bore-Hole Camera For Bedrock Surveys

A camera which takes 360-degree photos of a 3-inch-diameter bore hole has been developed by Engineering Research Associates, Inc., 1902 W. Minnehaha Ave., St. Paul 4, Minn., under the supervision of the Corps of Engineers. It is lowered into the hole to discover flaws in bedrock or cracks in concrete.

A conical mirror produces an image of a complete band of the hole, which is photographed on 16-mm motion-picture film. The two-dimensional image pictures are brought back into three-dimensional cylindrical form by reversing the process in the projector. A complete pictorial record of the bedrock features passes before the observer's



U. S. Army Photo

The new Army bore-hole camera developed by Engineering Research Associates takes 360-degree photographs of a 3-inch-diameter bore hole.

eyes as if he were descending into the hole.

Power for activating the camera and illuminating the hole comes from a gasoline-driven generator set and is supplied through three insulated conductors spun in a reverse-lag non-spinning-type steel cable. The camera housing is sealed to withstand a hydrostatic head of 500 feet, making it possible to photograph both wet and dry holes.

The camera is still in the experimental stage, but further information may be secured from the company or by using the Request Card at page 16. Circle No. 948.

Engine Improvements

All three models of the Continental AU series of industrial air-cooled engines are now available with a new external breaker point, condenser, and governor system. In the new units, breaker points and a flyball-type governor driven by the camshaft are grouped compactly, with the condenser under a cover that can be removed quickly. The assembly is housed high on the engine, remote from the blower, which is normally an area of dust.

Point and spark-plug life are said to be doubled because the assembly operates at half engine speed. Instead of wasting every other spark, as in the flywheel-type magneto used in many air-cooled engines, the points and the plug function only on the firing stroke, and hence wear on both is reduced by 50 per cent, the company claims.

Further information may be secured from Continental Motors Corp., Air-Cooled Engine Division, 12800 Kercheval Ave., Detroit 14, Mich. Or use the Request Card at page 16. Circle No. 907.

New Copying Machine

Production of a new Copyflex machine is announced by Charles Bruning Co., Inc., 125 North St., Teterboro, N.J. The Model 30 has a full 46-inch printing width to handle standard 42-inch roll stock or multiple cut sheets of copying paper. Its 48-inch 2,000-watt Vycor mercury arc lamp insures uniform exposure and speeds printing up to a maximum of 12 linear feet per minute, the company claims.

The unit is connected to a 230-volt 60-cycle ac electronic power line; 50-cycle machines are also available. It does not need any inks, negatives, masters, special lighting, dark rooms, plumbing, or exhausts to carry off fumes. Copies may be made on Copyflex sensitized paper, acetate-coated paper, film, and cloth. The operator merely feeds in the paper with the translucent original; the machine processes the copies and stacks them ready for use.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 953.



Bruning's Model 30 Copyflex has a printing width of 46 inches to handle 42-inch roll stock or multiple cut sheets of copying paper.

GREATEST

PORTABLE SCREEDING MACHINES EVER BUILT!

New Whiteman Models offer many big improvements!

NEW POWER!
Larger Wisconsin and B & S Engines.

NEW ADJUSTABLE FRAME.
Fits any width form.

NEW VERSATILITY.
Adaptable for overhead screeding.

NEW WEIGHT DISTRIBUTION.
Eliminates sag in screed sticks.

NOW!
Adaptable to Any Job!
Telescopic frame adjusts from 3' to 5' in width.

Never before has a screeding machine offered the superb performance, extreme versatility and rugged dependability of the new Whiteman Models RS-11 and 52-15. The perfect answer to screeding problems on slab floors, driveways, walks, narrow, winding roads, shoulders, bridges, approaches, tributary roads, limited and inaccessible areas. These machines puddle and vibrate the concrete throughout the entire depth and area,

thoroughly compact the slab, bring moisture to the surface and screed the slab to a perfect level preparatory to floating and finishing. Heavier aggregates do not settle to the bottom, but remain in suspension, resulting in a superior, far more durable slab. Results are equal to those of larger equipment. APPROVED BY MANY HIGHWAY ENGINEERS. Send coupon now for prices and literature.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. C8
3249 Casitas Ave., Los Angeles 39, Calif.
Please send prices, literature and name of distributor for ☐ Screeding Machines.
☐ Power Buggy ☐ Floating Finishing Machines.

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____



Concrete-Design Handbook

Answering a long-felt need for a comprehensive handbook on reinforced-concrete design, the Concrete Reinforcing Steel Institute has published the 412-page "CRSI Design Handbook". Of interest to both estimators and structural engineers, it contains basic theories, diagrams, and charts for approximate or complete designs. For quick computations, tables are included which make it possible to select structural members directly with given load and span data.

Designs are based almost entirely upon the 1951 ACI Reinforced Concrete Building Code. They cover floor systems, columns, footings, retaining walls, and areaways. A separate section

contains miscellaneous tables, diagrams, and formulas.

"CRSI Design Handbook" is priced at \$5.00 and may be purchased from the Concrete Reinforcing Steel Institute, 38 S. Dearborn St., Chicago 3, Ill.

Literature on Crushers

Literature on hammermills and roll crushers is available from Diamond Iron Works, Inc., 18th Ave. and N. Second St., Minneapolis 11, Minn. The hammermills feature continuous impact, long corrugated anvils, self-cleaning gates, and adjustable hammer arms. The roll crusher, which is generally used as a secondary crusher, will make reductions up to 4 to 1. The rolls are each driven directly through steel

sprockets bolted to the roll head.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 918.

Diesel-Engine Brochure

A 6-page brochure on diesel engines is announced by the P&H Diesel Engine Division of Harnischfeger Corp., 500 S. Main, Crystal Lake, Ill. It contains illustrations and information on four two-cycle models of 2, 3, 4 and 6 cylinders. Diagrams show torque, horsepower, and fuel consumption for each. The brochure also lists specifications and optional equipment.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 942.

Self-Propelled Curb Paver

A self-powered unit for paving curbs, gutters, and sidewalks is covered in a new booklet issued by Dotmar Industries, Inc., 503 Hanselman Bldg., Kalamazoo, Mich. It illustrates the Dotmar paver in use, and describes the screed types available.

The unit is powered by a 3.3-hp gasoline engine, and rides on wood rails attached to standard steel forms. It has a rapid eccentric tamping and strike-off action in front of the screed and finishing trowel. The company claims the unit will lay up to 10 linear feet per minute.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 889.

DISTRIBUTORS

ALABAMA—Tractor & Equipment Co., Inc., 4402 First Ave. N., Birmingham 1.
ALASKA—Jameson Engineering Sales Inc., 373 Dexter Horton Bldg., Seattle, Washington.
ARIZONA—Lively Equipment Co., Albuquerque, N. M. State Tractor & Equipment Co., 407 S. 17th Ave., Phoenix.
ARKANSAS—Euclid-Memphis Sales, Inc., Memphis 2.
CALIFORNIA—The Euclid Road Machinery Co., Emeryville; 339 W. Maple St., Monterey.
CANADA—Dietrich Collins Equipment Ltd., 890 S. W. Marine Dr., Vancouver 14, B. C.
FERGUSON Supply Alberta Ltd., 630 9th Avenue W., Calgary, Alberta.
S. H. Goddall Equipment Ltd., 435 Keating St., Toronto; P. O. Box 187, Port Arthur, Ontario.
P. O. Box 60 NDC, Montreal, Que.
Maritime Newfoundland Agencies Ltd., P. O. Box 822, Halifax, N. S.
COLORADO—Constructors Equipment Co., 3707 Downing St., Denver 5.
CONNECTICUT—The W. I. Clark Co., 2195 Dixwell Ave., New Haven.
DELAWARE—L. B. Smith, Inc., Camp Hill, Penna.
FLORIDA—Florida-Georgia Tractor Co., 2806 W. Beaver St., Jacksonville; 2418 State Rd., Lakeland; 2128 No. Miami Ave., Miami; 1400 S. Orange Blossom Trail, Orlando; New Quincy Highway, Tallahassee; 218 S. 12th St., Tampa.
GEORGIA—Tri-State, Inc., 880 Greenwood Ave. S.E., Atlanta 1; East Side Highway, Macon.
712-14 No. Washington St., Albany.
HAWAII—Grace Brothers, Ltd., 770 Ala Moana Road, Honolulu 10, Hawaii.
IDAHO—Intermountain Equipment Co., Broadway at Myrtle St., Boise; 210 No. 4th St., Pocatello.
ILLINOIS—Euclid-Chicago Co., 6027 Northwest Highway, Chicago 31.
Euclid Sales & Service, Inc., St. Louis 10, Mo.
INDIANA—Euclid-Chicago Co., Chicago 31, Illinois.
Eid-Holcomb Co., 1815 Kentucky Ave., Indianapolis 21.
IOWA—The Euclid Road Machinery Co., Hibbing, Minnesota.
Fehr Tractor & Equipment Co., Omaha 2, Neb.
KANSAS—The G. W. Van Kappel Co., Kansas City 8.
KENTUCKY—Euclid-Kentucky, Inc., 3800 Crittenden Drive, Louisville.
LOUISIANA—Euclid-Memphis Sales, Inc., Memphis 2.
BAIRD—W. A. Burditt, Inc., Route 1, R.F.D. 2, South Portland.
MARYLAND—Rish Equipment Co., Clarkburg, W. Va. L. B. Smith, Inc., Camp Hill, Penna.
MASSACHUSETTS—Clark-Wilson Co., 118 Western Ave., Boston 34.
The W. I. Clark Co., New Haven, Connecticut.
MICHIGAN—W. R. Anderson Co., Inc., 47 West Seven Mile Rd., Detroit 3.
The Euclid Road Machinery Co., Hibbing, Minn.
MINNESOTA—The Euclid Road Machinery Co., Highway 269 West, Hibbing.
MISSISSIPPI—Euclid-Memphis Sales, Inc., Memphis 2.
MISSOURI—Euclid Sales & Service, Inc., 5231 Manchester Ave., St. Louis 10.
The G. W. Van Kappel Co., 2461 Pennway, Kansas City 8.
MONTANA—Halt-Perry Machinery Co., P. O. Box 1367, Butte.
NEBRASKA—Constructors Equipment Co., Denver 5.
Fehr Tractor & Equipment Co., 1809-11 Cuming St., Omaha 2.
NEVADA—The Euclid Road Machinery Co., Emeryville, California.
Fauler Equipment Co., Salt Lake City 5, Utah.
NEW HAMPSHIRE—Clark-Wilson Co., Boston 34, Mass.
NEW JERSEY—L. B. Smith, Inc., Camp Hill, Penna.
Hubbard & Floyd, Inc., New York 31, N. Y.
NEW MEXICO—Lively Equipment Co., 2601 No. Fourth St., Albuquerque.
T. E. Potts Equipment Co., 2280 Sheridan Dr., Buffalo.
L. B. Smith, Inc., 337 W. Fayette St., Syracuse 21, N. Y.
NORTH CAROLINA—Hampton Roads Tractor & Equipment Co., Norfolk, Virginia.
North Carolina Equipment Co., P. O. Box 880, Greenville; Pineville Rd., Charlotte; Swanton Rd., Asheville; P. O. Box 129, Guilford; P. O. Box 685, Wilmington.
NORTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.
OHIO—The W. W. Williams Co., 835 Goodale Blvd., Columbus 8; 18301 Brookpark Rd., Cleveland 11; 514 Main St., Cincinnati 2; 1260 Conant St., Toledo (Maumee).
OKLAHOMA—The Euclid Road Machinery Co., Dallas.
OREGON—Intermountain Equipment Co., Boise, Idaho.
P. L. Crooks & Co., 2145 N.W. Pettygrove St., Portland.
PENNSYLVANIA—Atlas Equipment Corp., 635 Ridge Ave., Pittsburgh 12.
Standard Equipment Co., 182 Horton St., Wilkes-Barre; Hopburn & Lycoming Sts., Williamsport.
L. B. Smith, Inc., Camp Hill (Harrisburg); 29th & Montgomery Avenue, Philadelphia.
RHODE ISLAND—Clark-Wilson Co., Boston 34, Mass.
SOUTH CAROLINA—Southern Equipment Sales Co., Sumter Highway, Columbia.
SOUTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.
TENNESSEE—Euclid-Memphis Sales, Inc., 188 E. Butler Ave., Memphis 2.
Power Equipment Co., 1218 Island Home Ave., Knoxville; 800 W. Manning St., Chattanooga.
TEXAS—The Euclid Road Machinery Co., 1007 Levee St., Dallas 2.
Lively Equipment Co., Albuquerque, New Mexico.
UTAH—Fauler Equipment Co., 1361 So. 2nd West, Salt Lake City 4.
VERMONT—Clark-Wilson Co., Boston 34, Mass.
VIRGINIA—Hampton Roads Tractor & Equipment Co., W. 39th and Killam Ave., Norfolk.
Rish Equipment Co., 1601 Chamberlayne Ave., Richmond 10; 408 Center Ave., N.W., Roanoke 7.
WASHINGTON—A. H. Cox & Co., 1737 1st Ave. So., Seattle 4; 2015 Center St., Tacoma; 313 North Mission, Wenatchee.
P. L. Crooks & Co., Portland, Oregon.
Intermountain Equipment Co., E. 815 Sprague Ave., Spokane 5.
WEST VIRGINIA—Atlas Equipment Corp., Pittsburgh.
Rish Equipment Co., Kanawha Blvd., Charleston 23; East on U.S. 90, Clarksburg; P.O. Box 128, Bluefield.
L. B. Smith, Inc., Philadelphia, Penna.
WISCONSIN—Euclid-Chicago Co., Chicago 31, Ill.
The Euclid Road Machinery Co., Hibbing, Minn.
WYOMING—Constructors Equipment Co., Denver 5.
Fauler Equipment Co., Salt Lake City 5, Utah.

"EUC" SCRAPERS

Haul More Yardage At Less Cost



The "Euc" Scraper has a struck capacity of 15.5 cu. yds., 21 yds. heaped... 10 speed transmission... 275 h.p. engine... top speed, loaded, 28.2 m.p.h.



Four wheel Euclid tractor provides easy, positive steering, excellent maneuverability, and has ample power, traction and flotation for fast loading and travel on steep grades and soft fills.

Owners in all parts of the country report that the Euclid Scraper with a heaped capacity of 21 cu. yds., has outperformed other scrapers of comparable size on a wide range of jobs. As one leading contractor puts it, "The 'Euc' outperformed other scrapers, had less down time, and maintenance costs were about 50 per cent less." After completing a rush airport job, one with a wide variety of soils, another contractor stated, "We're glad that our choice was Euclid over all other makes of rubber-tired scrapers."

Because of fast, easy loading, high travel speed, good traction and flotation and excellent maneuverability, Euclid Scrapers move more loads per hour at more profit per load. Have your nearest Euclid Distributor give you complete information and job proved performance data on this Euclid Scraper—get more production at less cost!

THE EUCLID ROAD MACHINERY CO., CLEVELAND 17, OHIO

EUCLID



Move the Earth

An Editorial

Taxing the Dump Truck

Taxing and finance departments of many states are concerned about levying sufficient taxes on big trucks to offset the damage which, they feel, has been done to the highways by these heavy vehicles. Over-the-road carriers are generally considered the prime culprit in this regard, and the trucking industry is not paying these taxes without a struggle. Yet a certain inequality in truck taxing affects highway contractors, who have, for the most part, accepted it with little or no protest.

Take the case of the typical contractor who gets a road contract in the winter and does the grading in the spring, the paving in the summer, and shoulder and slope work in the fall to

complete the job in one construction season. This average contractor, with a fleet of his own trucks, usually operates most of them less than half the year, unless he is located in that narrow border along a few of the southern states where year-round work is at times possible.

Even though his trucks are on the road only from four to six months, this contractor pays motor-vehicle taxes for the full year. States generally have half-year rates with July 1 the demarcation date, but this does not help a contractor who needs his trucks for dirt-moving in May and June. A breakdown of license fees into quarter-year fractions, as the trucks are actually used,

would help to equalize the tax overhead carried by contractors.

Many states, too, in their imposition of weight fees are taxing the big trucks off the highways as they discriminate in favor of the light truck. Thus they are cutting off revenue at the very source. The light trucks, for instance, in a state where an 18,000-pound single-axle load is permitted, can generally carry a pay load of 14,000 pounds. On the other hand the big truck, that is restricted to a 13,000-pound load on each of its properly spaced dual axles, may be carrying a pay load under 14,000 pounds, or less than that carried by the light truck.

Moreover with the graduated scale of weight-tax, the fee for the light truck, when figured at \$1.25 for each 100 pounds, is more favorable than the \$2.00 for each 100 pounds that the heavy truck is taxed. Contractors who buy fleets of heavy trucks, to do a job economically and quickly at the lowest possible price for a state highway department, find themselves at a disadvantage

costwise. Some are getting rid of their big trucks and are hiring light trucks, only as they need them, to avoid financial headaches. If the taxing authorities become aware of loss of revenue to the state from present policies, the highway contractor may get a break with his trucking problem.

A good example of this situation is afforded by L. A. Davidson of Lansing, Mich., a general contractor who does considerable road-construction and grade-separation work throughout Michigan. Davidson has a fleet of over 40 trucks—Macks, Diamond T's, and Federals—whose weight puts them in the "heavy" category. In the "light" truck group he has Fords, Chevrolets, and Studebakers. A comparison discloses some interesting inequalities.

The Ford single-axle dump truck costs about \$3,000, weighs 6,750 pounds, and, at the current rate of \$1.25 per 100 pounds, its license fee is \$84.38 annually. With the truck weight distributed, the rear axle takes less than 4,000 pounds dead load, permitting a 14,000-pound pay load. This conforms to the 18,000-pound limit on single-axle vehicles.

Now let us examine one of the heavy trucks, say the dual-axle Diamond T, that costs about \$12,000. With a 12-cubic-yard dump body its weight is 18,720 pounds, and at the tax rate of \$2.00 per 100 pounds, the license fee per year for this truck is \$374.40. Its weight is so distributed that the dual rear axles take a 12,100-pound dead truck weight. With a 26,000-pound limit on dual axles, this heavy truck may carry only a 13,900-pound pay load. Thus the heavy truck that costs four times as much as the light truck, and is taxed in license fees nearly 4½ times as much, actually carries a lesser pay load. And pay loads may mean the difference between profit and loss on a construction job.

Putting it another way, a contractor can purchase and license four light trucks for what it would cost to purchase and license one heavy truck. And with these four light trucks he can haul over four times the pay load he could with one heavy truck. Of course the contractor must use four truck drivers instead of one, which is all right with the teamster's union but not so good in trying to keep down the cost of road building.

Contractors' heavy trucks are designed and built to carry about 40,000 pounds which they handle very well in off-the-road hauling. But when they operate over the highways, the weight that goes into their sturdy construction is a handicap, according to most state license-fee schedules. It is time for state finance departments to examine these inequalities in truck-license fees, and to stop discriminating against the contractor who wants to make the best possible use of his heavy-truck investment.

The States and the Scrap

An average of about 675 tons of ferrous scrap per state (33 states reporting) kept the February scrap-recovery figures up to the level of January, reports the Scrap Recovery Subcommittee of the AASHO. Texas came first with 4,000 tons; Alabama second with 1,610 tons; Florida third with 1,247 tons. Keep the scrap coming in!



Pardee Place, contractor of East Stroudsburg, Pa., digs and loads old concrete paving at a rebuilding project.

**9500
POUNDS OF
APPLIED POWER**

MAKE *HASH* OF CONCRETE...

Contractor digs and loads old paving with HT4 TRAXCAVATOR!

One man on the seat of the HT4 TRAXCAVATOR controls 9,500 pounds of pushing power concentrated on the rugged bucket . . . he has a lifting power of over 6000 pounds. This applied power digs out old, cracked concrete paving in loadable chunks.

The HT4 will handle this job and hundreds more just as tough. It's built with durability . . . a machine that can turn in profitable production on concrete-busting and easily make big money on "soft" digging, loading and grading tasks.

TRAXCAVATORS are unit-engineered to "Caterpillar" Diesel Tractors for longer life, greater production and lower costs. Ask your "Caterpillar" Dealer for information on the model that can do your work — at a profit . . . or write direct for further information.

TRACKSON COMPANY, Milwaukee 1, Wis.
A Subsidiary of Caterpillar Tractor Co.

TRACKSON

TRAXCAVATORS®
TRACLOADERS
PIPE LAYERS
EARTH AUGERS

MESSINGER CONCRETE VIBRATORS and GRINDERS



Use "Messinger" Service

A few exclusive dealer territories are available.
Messinger Vibrators
FRANK D. MESSINGER
P.O. Box 124
FAIR HAVEN, MICH.

FIRST CLASS
Permit No. 280
(Sec. 34.9 P.L. & R.)
New York, N. Y.

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

3c - POSTAGE WILL BE PAID BY

Contractors and Engineers Monthly

470 FOURTH AVENUE

NEW YORK 16, NEW YORK

FIRST CLASS
Permit No. 280
(Sec. 34.9 P.L. & R.)
New York, N. Y.

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

3c - POSTAGE WILL BE PAID BY

Contractors and Engineers Monthly

470 FOURTH AVENUE

NEW YORK 16, NEW YORK

Please send me information on new products and/or catalogs described in the editorial columns of this issue, as circled below:

851 852 853 854 855 856 857 858 859 860 931 932 933 934 935 936 937 938 939 940
861 862 863 864 865 866 867 868 869 870 941 942 943 944 945 946 947 948 949 950
871 872 873 874 875 876 877 878 879 880 951 952 953 954 955 956 957 958 959 960
881 882 883 884 885 886 887 888 889 890 961 962 963 964 965 966 967 968 969 970
891 892 893 894 895 896 897 898 899 900 971 972 973 974 975 976 977 978 979 980
901 902 903 904 905 906 907 908 909 910 981 982 983 984 985 986 987 988 989 990
911 912 913 914 915 916 917 918 919 920 991 992 993 994 995 996 997 998 999 1000
921 922 923 924 925 926 927 928 929 930

Name _____ Title _____
(Please Print)

*Company or Gov't Dept. _____

Address _____ Zone _____ State _____

City _____

*** Listing of your Business Connection is essential for handling literature request**

Contractors and Engineers Monthly - Request Card - May '52

Please send me further information on products shown in the Ad on:

Page _____ Product _____ Adv. _____ (Advertiser's Name)

Page _____ Product _____ Adv. _____

Page _____ Product _____ Adv. _____

Page _____ Product _____ Adv. _____

In addition I would like to receive information on the following:

Name _____ Title _____
(Please Print)

*Company or Gov't Dept. _____

Address _____ Zone _____ State _____

City _____

*** Listing of your Business Connection is essential for handling literature request**

How to Keep Within The Fair Labor Act

What You Should Know Where Overtime-Pay, Minimum-Wage, And Child-Labor Provisions Are Concerned

By FRANK J. MUENCH,
Regional Director, Wage and Hour and
Public Contracts Divisions, U. S. Department of Labor

• DURING the construction of the New Jersey Turnpike, investigators from the Department of Labor's Wage and Hour Division found that 117 of the contractors' employees had not been paid overtime—or had worked for less than the Federal minimum wage of 75 cents an hour. Seven contracting firms were involved. When the violations were brought to their attention, all agreed to settle the claims. They paid \$16,958 to the 117 employees.

What happened on the Turnpike was not unusual, however. According to the 1951 annual report of Labor's Wage and Hour and Public Contracts Divisions, 61 per cent of all construction contractors investigated during fiscal 1951 had violated the Act's minimum-wage, overtime-pay, or child-labor provisions.

Whom Does It Cover?

Most of the Turnpike contractors said they did not know their operations were covered under the Fair Labor Standards Act—commonly known as the Federal Wage and Hour Law.

This Act covers employees engaged in interstate commerce or in producing goods for interstate commerce. All such employees must be paid not less than 75 cents an hour. They must also receive not less than time and one-half their regular rates of pay for any hours over 40 that they work in any one work week (unless they are exempted from one or both of these requirements by a specific provision of the Act).

A General Yardstick

Here is a general yardstick for determining contractor obligations under the law. (In borderline cases, however, engineers and contractors should check their specific jobs with the nearest Wage and Hour Office. Expert aid is there for the asking. It will save headaches and lawsuits—and build better labor relations.)

First of all, contractors must realize that the wage and hour provisions of the Act do not deal in a blanket way with construction or with any industry as a whole. The minimum-wage section of the law, for example, says that every employer shall pay the statutory minimum wage to "each of his employees who is engaged in commerce or the production of goods for commerce." Hence it is an individual matter, involving both the nature of the project and the nature of the job a particular employee has on that project. Some contractors go an entire season without having any of their employees covered under the Wage and Hour Act. Other firms have some employees covered by the Act and others exempt. Still other operators have all of their employees under the Act on all their jobs.

Sometimes only part of an employee's activities during a particular work week are covered under the Act. He is nevertheless covered for all hours worked during that week. The Act makes no distinction as to percentage or volume of activities for either the employee or the employer.

Neither is the Wage and Hour Law limited to employees working for an

hourly wage. It covers piecework and salaries as well. Congress intended that whatever the basis of pay, the employee must receive at least the equivalent of 75 cents an hour, and time and one-half the regular rate of pay for all hours over 40 during the work week.

Engaged in Commerce

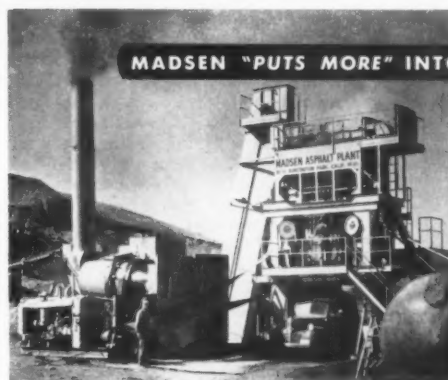
Employees covered by the wage and hours provisions as "engaged in commerce" are those doing work involving or related to the movement of persons or things "among the several states or

between any state and any place outside thereof".

A practical question to ask about any

project is: Without this project would interstate or foreign commerce be im-

(Continued on next page)



MADSEN "PUTS MORE" INTO AN ASPHALT PLANT

...so that you can get more out of it!

MADSEN plants are designed and built for extreme requirements. Over the years ahead, this extra margin of quality and value in MADSEN Asphalt Plants pays off for you in greater output, lower cost operation and less maintenance... gives you the kind of operation that puts more money in your pocket on job after job. Whether it's a complete asphalt plant or a single product to serve a specific job... remember MADSEN gives you more!



Write for your copy of the MADSEN Catalog

MADSEN IRON WORKS, INC.
P. O. BOX 589 • HUNTINGTON PARK, CALIF.



"We just naturally chose Dodge!"

... says K. F. HOFFMAN, owner, Tri-State Excavating Company, Dubuque, Iowa

"We first tried a Dodge truck in 1946," says Mr. Hoffman, "and we were so pleased with it that when we needed a new truck in 1951 we just naturally chose Dodge!"

"Dodge trucks give the kind of performance we want—there's plenty of power for our heavy jobs. They're economical trucks, too. Expenses for gas, oil and upkeep stay 'way down, year after year."

Certainly, Mr. Hoffman realizes additional profits each day through the low-cost power of Dodge "Job-Rated" trucks—and so can you! Whatever you're doing—hauling dirt, spreading asphalt, or any one of many

rugged jobs—there's a Dodge truck engineered at the factory to fit the job, save you money, last longer. For example, a Dodge "Job-Rated" 2½-ton model has a powerful 114-h.p. engine—plus the extra maneuverability made possible by short turning diameter... the added dependability assured by moistureproof ignition... and many other outstanding advantages.

Why not make sure that you get the power and dependability you want on your job? The man to see is your helpful Dodge dealer. His "welcome mat" is always out for you, and he'll be happy to give you just the information you need about the right truck for your hauling job.

DODGE "Job-Rated" TRUCKS

How to Keep Within The Fair Labor Act

(Continued from preceding page)

peded, impaired, or abated? Another question to ask is: Does the service you are rendering contribute materially to transactions in interstate or foreign commerce?

Contracting jobs always covered by the Act are those which involve work on the maintenance, repair, improvement, or extension of existing media of interstate commerce. Typical illustrations include railroads, highways, city streets, pipelines, telephone and telegraph lines, electrical transmission lines, radio facilities, rivers, streams, or other waterways over which interstate or foreign commerce moves more or less regularly.

Similarly, work done to improve, repair, or maintain airports; railroad, bus, truck, or steamship terminals; telephone exchanges; radio and television stations; post offices and express offices;

bridges and ferries carrying traffic engaged in interstate and foreign commerce, even though within a single state—all work of this kind is under the minimum-wage and overtime provisions of the Act. Also covered is work done on harbors, piers, wharves, and docks, as well as on dams, dikes, revetments, and levees which improve the usefulness of interstate waterways, railways, or highways.

In all these instances the work of employees is so closely related to interstate or foreign commerce as to be, in practice, a part of it. Included among the employees thus "engaged in Commerce" are those doing maintenance-of-way work, office workers, guards and watchmen, and those engaged in maintaining or altering or repairing ships, barges, dredges, trucks, or trailers used as media of interstate commerce.

Courts have held employees covered when they perform such work as watching or guarding ships or vehicles, or maintaining, watching or guarding

warehouses, railroad or equipment yards, airports, or other transportation terminals.

Also covered by the Act are employees engaged in building structures which are necessary for the production of goods for interstate commerce—for example, oil derricks. Employees engaged in making oil derricks are engaged in closely related occupations directly essential to the production of goods for interstate commerce.

Another case is that of employees who are installing machinery either for the production of goods of commerce or in accordance with an interstate contract of sale. These employees are covered by the Act not only where such installation will improve or enlarge the production facilities of an existing plant, but also where it is going into an entirely new plant.

Other contractor employees within the coverage of the Act are those engaged in maintaining, repairing, or reconstructing buildings or machinery used in the production of goods for

interstate commerce. These are considered to be engaged in a closely related process or occupation directly essential to the production of such goods. The operations covered by this principle include, for example, repairing, remodeling, and enlarging factory buildings, replacing one type of acid-disposal trench with another, or painting and maintaining factory buildings.

Work Not Covered

Work not so immediately related to the operation of commerce is not covered under the Act. For example, in the case of *McLeod v. Threlkeld*, the

(Continued on next page)

ON OUTSTANDING JOBS ACROSS THE NATION

BARCO is the Answer!

SOIL COMPACTION

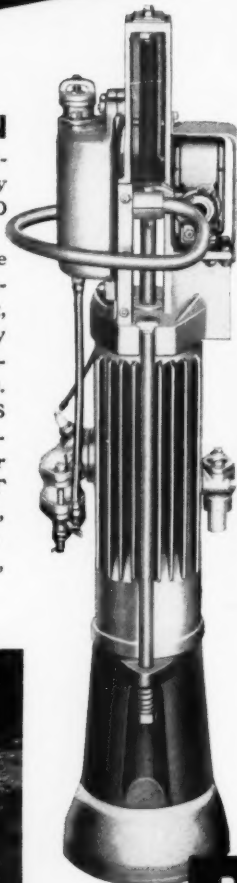
is the key to better construction on important projects throughout the country—AND ON THESE JOBS, BARCO IS THE ANSWER!

Contractors and engineers, alike, are finding that unless soil is properly compacted during construction, settlement, erosion, and structural damage can easily develop in areas near abutments, foundations and walls, and other critical points.

This is where BARCO RAMMERS quickly pay for themselves! See for yourself—ask for a demonstration. Send for our latest catalog and new "COST DATA" Bulletin. BARCO MFG. CO., 1818F Winnemac Ave., Chicago 40, Ill. In Canada: The Holden Co., Ltd., Montreal, Canada.



MISSOURI HIGHWAY—The State of Missouri has been one of the leaders in studying the value and importance of soil compaction on highway construction for preventing settling, washouts, and erosion. This picture shows Barco Rammers used by Fred Weber Contractors, Inc., St. Louis, on Missouri's famed Natural Bridge Road.



TEXAS DAM—On projects costing millions of dollars, it pays to use construction methods that insure permanence. That's why soil compaction is a very important factor in the construction of dams. This picture shows Barco Rammers working on the Whitney Dam Project on the Brazos River near Whitney, Texas. Contractors: L. P. Reed, Inc., and Martin & Grace, Inc., both of Clifton, Texas.



OHIO FACTORY BUILDING—The Austin Company recently attracted nation-wide attention with the design and construction of an ultra-modern plant for The Lincoln Electric Company in Cleveland, Ohio. Evidence of the high standards of construction maintained by The Austin Company can be seen in the use of Barco Rammers in the above picture. The Austin Company has many Rammers in use on building projects throughout the country.

BARCO

"Pegson" Gasoline

RAMMER

For Soil Compaction Close to Walls, Culverts and Abutments—in Trenches, Ditches

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

WATSON-STILLMAN

HYDRAULIC POWER TOOLS FOR INDUSTRY

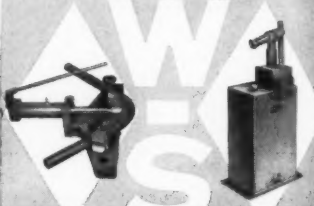


HYDRAULIC JACKS

WIRE ROPE SHEARERS

These sturdy units, with either independent or integral pumps, are useful for many jobs in construction and maintenance. Capacities from 20 to 500 tons.

W-S wire, cable and bar shears provide years of trouble-free general service. They are light and portable for convenient on-the-job use.



PORTABLE PIPE BENDERS

HAND PUMPS

Bends all standard, extra heavy and double extra heavy steel pipe from 3/8 in. to 2 in. inclusive, as well as standard weight pipe up to 3 in. diameter. Also handles solid mild steel bars up to 2 in. diameter.

Single and double plunger types, with reservoirs of different capacities to suit the job, these hand pumps have a wide application for operating small hydraulic tools, jacks and other hydraulic equipment, and for general hydrostatic testing purposes.



Send for your copy of Bulletin A-2 It's Free.

9-M-11

DISTRIBUTOR PRODUCTS DIVISION
WATSON-STILLMAN
ROSELLE, NEW JERSEY

Do You

Want to Sell or Buy Used Equipment?
Need experienced help?
Have a position open?

Send your copy to *The Trading Post*
Contractors & Engineers Monthly,
470 Fourth Ave., New York 16, N.Y.

United States Supreme Court held that a cook was not covered under the Act, though his job was to prepare meals for workmen who were mending tracks for interstate trains.

Not covered are employees doing excavating, concreting, and paving work on private estates or for private homes, schools, retail stores, or churches. Nor does the Act cover employees working on new and independent buildings or structures which are not part of the production of goods for commerce and will not become an integral part of any pre-existing facilities for the production of goods for commerce.

Exceptions to "No Cover" Rule

Contractors working on such projects should remember, however, that in any week in which one of their employees is engaged in both covered and non-covered work, he is entitled to the benefits of the Act for all hours worked during that work week.

Also, employees on these jobs (including office personnel) are covered if they are ordering or procuring materials or equipment from other states; receiving, unloading, checking, watching, or guarding such articles coming from outside the state; doing interstate communication work (by telephone, telegraph, mail, etc.); or preparing, handling, or otherwise working on materials, equipment, or other goods which will be sent to another state (including preparing plans, orders, estimates, accounts, reports, and other data intended for transmission from within the state to points outside it).

Who Qualifies for Exemption?

The Wage and Hour Law specifically exempts employees working in a bona fide executive, administrative, or professional capacity or in the capacity of outside salesmen. Contractors must be certain, however, that any employees they seek to qualify for exemption meet the requirements of Regulations, Part 541. These regulations are explained in the Wage and Hour Explanatory Bulletin that covers exemptions.

Of interest to some contracting and engineering firms is the exemption from the overtime provisions which applies to certain employees of motor carriers who are subject to regulation by the Interstate Commerce Commission. The exemption, however, applies only to the overtime provision.

Child Labor

Every contractor must remember that the 1949 amendments to the Fair Labor Standards Act broadened the child-labor provisions to include jobs in interstate commerce. Children under 16 may not be employed on any covered contracting jobs during the hours when school is in session. Eighteen is the minimum age for legal employment on the following hazardous occupations: explosives manufacturing; motor-vehicle driver or helper; coal mining; logging and sawmilling; any occupation involving exposure to radioactive substances; and operating power-driven woodworking machines, power-driven hoisting apparatus (including riding on freight elevators), and power-driven metal-forming, punching, and shearing machines.

Interstate Commerce

Those employees regularly crossing state lines to do their work are generally considered in commerce. However, merely crossing state lines to get from their homes to work does not provide a basis for coverage.

Borderline cases will, of course, arise. To cite a specific example, the Administrator recently had an inquiry from a construction contractor as to whether employees engaged in constructing a new express highway between Baltimore and Washington were covered by the Act. The Administrator pointed out that the new highway would join ex-

isting roads in Baltimore and Washington and that it would further facilitate interstate traffic. He held that its construction constituted an extension of existing interstate commerce.

The Administrator ruled that in his judgment it was immaterial that the construction company was building only 1,500 feet in the middle of the proposed highway without joining existing work at either end. It was only reasonable to assume, he stated, that the proposed highway in due time would be completed and would then extend the existing network of highways between Baltimore and Washington.

The Administrator, as far back as January, 1940, took the position that a contractor was engaged in reconstructing an essential means of commerce when his job of straightening an existing highway involved the construction of a part through virgin land and the building of new bridges.

In the case of *Walling v. McCrady*
(Concluded on next page)

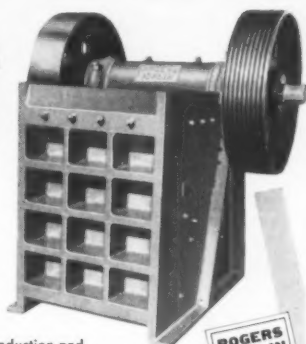
ROGERS
BUILDS 'EM
tough

ROGERS JAW CRUSHERS are built to handle the most difficult crushing operations. Hard glacial gravel, basalt, granite, extremely hard ores, ferrochrome alloys and many other hard and abra-

Sizes from 5 x 6 to 32 x 40 inches • Steel-weld or Cast Steel Frame • Oversize Shafts and Bearings • Self-Aligning or Bronze Bearings • Box Section, Cast steel Pitman • Extra long, Manganese Steel Jaw Plates • Dust-Proof Bearing Seals • Stationary, Skid-Mounted or Portable

ROGERS

IRON WORKS Company
Joplin, Missouri



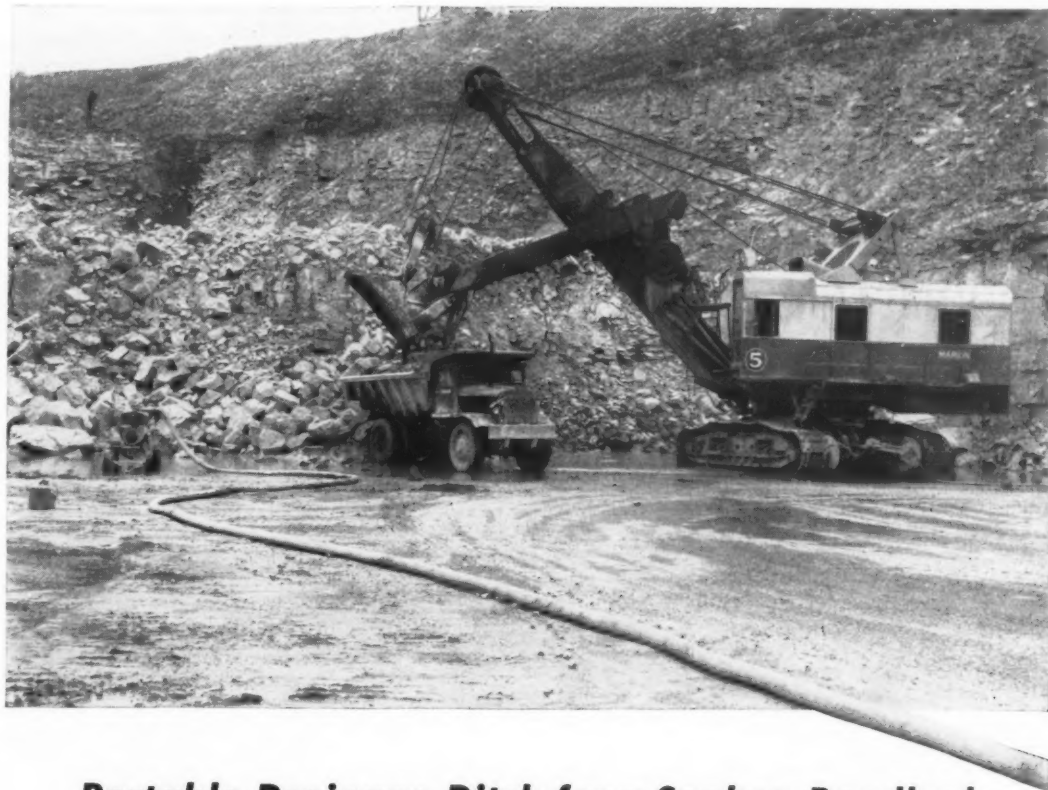
ROGERS
JOPLIN

...sive materials are being crushed. High production and continuous operation have prompted hundreds of owners of ROGERS JAW CRUSHERS to say "Sure glad Rogers builds 'em tough!"

OTHER ROGERS EQUIPMENT:

APRON FEEDERS
RECIPROCATING
FEEDERS
CONVEYORS &
ELEVATORS
HAMMERMILLS
PORTABLE CRUSHING
PLANTS
ROLL CRUSHERS

ROCK & ORE
WASHERS
REVOLVING SCREENS
LIVE ROLL GRIZZLYS
UNDERGROUND
LOADERS
MINE HOISTS
DRILL JUMPOS



Portable Drainage Ditch for a Sunken Roadbed

● The rock floor of this limestone quarry, nearly a hundred feet below ground level, presents a constant drainage problem.

Men and equipment must be free to work around the clock in any kind of weather... free to work despite rain squalls, spring thaws or the gradual seepage of surface water through the overburden.

And, since the work location shifts as each load of stone is removed, the drainage facilities must be able to move with the shovels.

Getting the water off is a job for hose... a tough, flexible water carrier that can be dragged over abrasive surfaces, subjected to falling rock, snaked into out-of-the-way crevices and lengthened or shortened at the turn of a coupling.

The Bessemer Limestone Company, a Republic Rubber customer for more than a generation, uses Republic's Water Hose for this purpose.

They use Republic Hose because it stands up better, handles easier, lasts longer on the job.

Water Hose is just one of Republic's complete line of Industrial Rubber Products that is quality built and sold through Republic Distributors who are experts in their job of helping you select and apply the right hose or belt for your specific job.

Your Republic Distributor is ready to make a complete, free analysis of your requirements now. Contact him or write us today for full facts on how this analysis results in better performance, better service and less costs for you on the job.



INDUSTRIAL RUBBER PRODUCTS BY
REPUBLIC RUBBER DIVISION
Lee Rubber & Tire Corporation
YOUNGSTOWN, OHIO

How to Keep Within The Fair Labor Act

(Continued from preceding page)

Construction Co., a portion of county road tying in to interstate highways was relocated and a new conduit was constructed for a telephone company. This was held to constitute engaging in interstate commerce. The McCrady case held that the "facilities worked on" need not be "employed in commerce during their construction".

When in Doubt, Ask

Strict observance of the Act lessens the possibility of liabilities for a contractor. The Wage and Hour and Public Contracts Divisions of the U. S. Department of Labor, under the direction of Administrator William R. McComb, are responsible to Congress for assuring compliance with the provisions of the Act. This compliance is essential in fairness to law-abiding employers, otherwise they would be at a competitive

disadvantage with the less scrupulous. Congress has directed that these standards must and will be maintained on a nation-wide basis.

Our investigations, therefore, will continue to cover construction work, including the many major highways currently being planned. The Administrator considers our job primarily an educational one and prefers to assist contractors on questionable cases rather than uncover violations in the field. Due to the wide scope of the construction industry and the variety of situations and activities it involves, this discussion does not pretend to be exhaustive. To supplement it, I extend the invitation on behalf of Administrator McComb to contractors throughout the nation to consult freely with our regional and field offices. You will find our staff members friendly and efficient. Their services are yours for the asking.

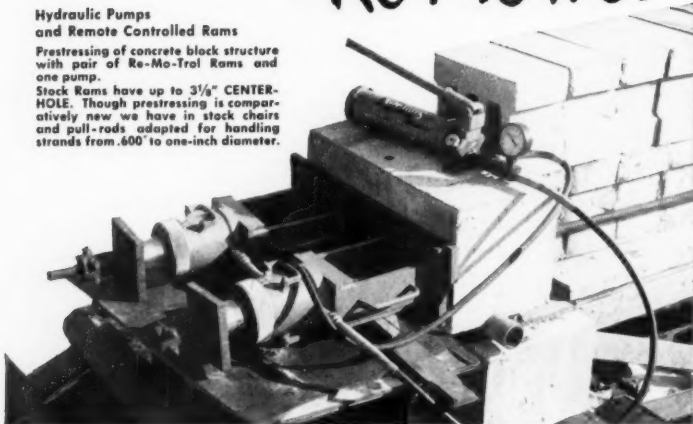
Accidents don't happen; they are caused. Remember: safety always pays.

Simplify Set-Up in PRESTRESSING CONCRETE with SIMPLEX Re-Mo-Trol

Hydraulic Pumps and Remote Controlled Rams

Prestressing of concrete block structure with pair of Re-Mo-Trol Rams and one pump.

Stock Rams have up to 3 1/2" CENTER-HOLE. Though prestressing is comparatively new we have in stock chairs and pull-rods adopted for handling strands from .600' to one-inch diameter.



The Simplex Re-Mo-Trol with the Center-Hole Ram eliminates need for complicated rigging in prestressing of concrete—saves time, cuts costs. Single rods or strands pass through the Center-Hole Ram for fast set-up and smooth, even operation. Double

strand pulls are made with two Rams operated from a single pump . . . no need for heavy, clumsy yokes. Pressure gauge on pump gives accurate stress control. Two Pumps with solid or center hole rams are available in models 10 to 100 ton capacities.

SIMPLEX JACKS...

Speedy... Safe... Versatile... for All Construction Operations

SIMPLEX Ratchet Lowering Lever Jacks
Safe... Efficient... Rugged. Lift full capacity on cap or toe. Available in capacities of from 5 to 35 tons.

SIMPLEX Trench Braces

Protect Against Cave-ins. Steel drop forgings, with ball and socket joints at ends for quick adjustment and tight grip. Adjustable to any width trench. Available with or without pipe.

Simplex JACKS
LEVER - SCREW - HYDRAULIC

Write for General Catalog No. 50 for full information . . . today.

TEMPLETON, KENLY & CO. • 1002 S. Central Ave., Chicago 44, Ill.

Steel-Company Executives

Mississippi Valley Structural Steel Co., Melrose Park, Ill., which observes its fiftieth anniversary this year, announces the promotion of two of its executives. Einar T. Blix is Executive Vice President, and John C. Arntzen succeeds him as Manager of the Melrose

Park plant. In his new capacity, Mr. Blix is in charge of sales and operations for the company's plants at Melrose Park, Ill., Decatur, Ill., St. Louis, Mo., and Flint, Mich.

Rollin D. Wood, President of the American Institute of Steel Construction, is Chairman of Mississippi Valley Structural Co.

NEW COMPENSATING SPRING BINDERS

Assure constant, uniform tension



NOTE THE TAKE-UP FEATURE

Designed for and accepted by U. S. Military after thorough tests over all kinds of terrain and conditions. Four models made have the CANTON "Take-Up" feature included.

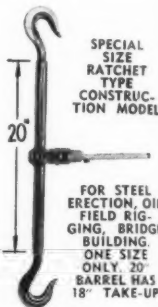
THE CANTON "TAKE-UP" ACTION picks up slack, binds in one operation. Design and heavy duty construction eliminates spread or release while in operation. Each factory tested, guaranteed for specified capacities. 7 sizes from 4,000 to 35,000 lb. rating, priced \$3.00 to \$14.80. Continuous action makes them a versatile tool in steel, lumber, machinery hauling, logging, oil fields, rigging. Two sizes made without take-up feature.

POPULAR AMERICAN FORGE RATCHET LOAD BINDERS

COMPLETE SAFETY IN TIGHTENING, BINDING, RELEASING LOADS . . . versatile "turnbuckle" principle has wide range of application. One man easily operates without aid of extension pipe; no kick-backs, full 8" take-up. 3 sizes, \$14.90 to \$18.10. Special size ideal for trueing steel work on building construction.

CANTON CAST PRODUCTS CO.
Maker of Cancap Exhaust Protectors

2150 13TH STREET N. E. • CANTON 5, OHIO
A Subsidiary of the Canton Malleable Iron Co.



SPECIAL SIZE RATCHET TYPE CONSTRUCTION MODEL

FOR STEEL ERECTION, OIL FIELD RIGGING, BRIDGE BUILDING, ONE SIZE ONLY 20" BARREL HAS 18" TAKE-UP

STRENGTH
for ADAPTABILITY
ECONOMY



Lincoln High School
East St. Louis, Illinois
Contractor: Ferd Gonschinski
Architect: S. T. Pabst

Specify LACLEDE STEEL JOISTS

FASTER CONSTRUCTION—Light, easily-handled, pre-fabricated to speed the job.

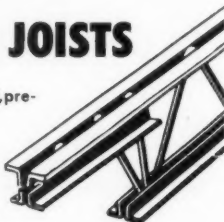
ADAPTABLE—Laclede Steel Joists combine efficient structural function with architectural versatility.

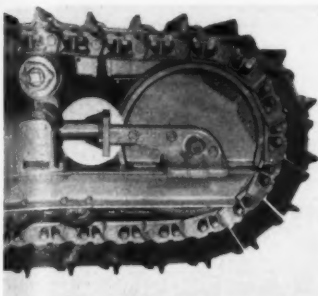
ECONOMICAL—Laclede Steel Joists assure more room at less cost. High strength plus light weight gives substantial savings in foundation and framework. Utility conduits, pipes and lines are easily threaded through the open webs.

Specify these Laclede Products for your construction needs . . . Multi-Rib Reinforcing Bars—Steel Pipe—Welded Wire Fabric—Form and Tie Wire—Spirals—Conduit—Corrugated Steel Centering—Electrical Weld and Gas Tubing.



LACLEDE STEEL COMPANY
St. Louis, Mo.





The Hydrajuster is a hydraulic track adjuster for all models of Allis-Chalmers, Caterpillar, and International crawler tractors.

New Track Adjuster

A hydraulic track adjuster for all models of Allis-Chalmers, Caterpillar, and International crawler tractors is available from Machinery Parts Sales Corp., P. O. Box 7682, Dallas, Texas. A few shots from a standard grease gun take up the slack in the track, eliminating the time-consuming task of adjusting the track manually with screw and nut.

The manufacturer states that the Hydrajuster eliminates unnecessary wear on rails, idlers, rollers, sprockets, and other mechanical parts. Once the tracks have been broken, it can be installed in the field in approximately 1½ hours.

Further information may be secured from the company, or by using the Request Card at page 16. Circle No. 930.

Catalog on Motor Grader

The Model 104 motor grader is featured in a catalog issued by Galion Iron Works & Mfg. Co., Galion, Ohio. Its job applications are illustrated, as well as its mechanical features such as hand steering with hydraulic booster, box-type single-member frame, and full visibility.

With its hydraulic shiftable mold-board, the grader can make cuts at 97 inches beyond the rear tires and at angles up to 90 degrees. Bulldozer, plow, odometer, cab, and heating attachments are also available.

This literature may be obtained from the company by requesting Catalog No. 353, or by using the Request Card at page 16. Circle No. 910.

Diesel Generating Sets

A booklet on diesel-electric generating sets is available from Murphy Diesel Co., 5317 W. Burnham St., Milwaukee 14, Wis. It illustrates and gives specifications on 4 and 6-cylinder units.

The Murphy line features unit fuel injection, governor-controlled frequency regulation, and micro-control governor. Installation can be either portable or stationary.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 894.

Roebbling Expands in West

John A. Roebbling's Sons Co., Trenton, N. J., manufacturer of wire and wire products, has moved its Los Angeles office and warehouse (formerly at 216 S. Alameda St.) to a new building at 5340 E. Harbor St. Distinctive in design, the new building has a front almost entirely of glass and selected red brick with deeply raked horizontal joints. The 44,500 feet of floor space give plenty of room for offices and modern service and storage facilities.

Those having their offices in the new building include: R. C. Groesbeck, District Manager, Wire Rope Division; J. L. Kelley, Pacific Coast District Supervisor, Wire and Cold Rolled Products; and G. H. Cederlof, District Supervisor for the Electrical Wire Division.

Conveying-Equipment Data

A 43-page bulletin which features Rex elevating, conveying, and power-transmission equipment has been issued by Chain Belt Co., 4701 W. Greenfield Ave., Milwaukee 1, Wis. It contains complete details and specifications on drive and conveying chains and bulk handling equipment. It includes cut-away and diagrammatic views of chain, and lists dimensions, strengths, and weights.

The bulletin explains the correct type of sprockets and traction wheels to order for almost every need. It illustrates, describes, and lists applications for bucket elevators, apron and pan conveyors, and feeders. It also contains a section on Rex belt-conveyor idlers, accessories, and flat-spray nozzles. A price list is enclosed with each bulletin.

This literature may be obtained from the company by requesting Bulletin 52-53, or by using the Request Card at page 16. Circle No. 940.

Birmingham



LOW
BED TRAILERS

Illustrated is Model 1650 FLU, 50-ton capacity with rear ramp and dolly, sixteen 8.25 x 15, 12-ply tires and air brakes. We build low-bed trailers to suit your particular job needs, 3-ton to 150-ton capacity. All frames are electrically welded of open hearth steel shapes and are designed with ample factor of safety for greater capacity, ease of handling and rugged wear.

See us or our distributors for special designs, catalog and prices.

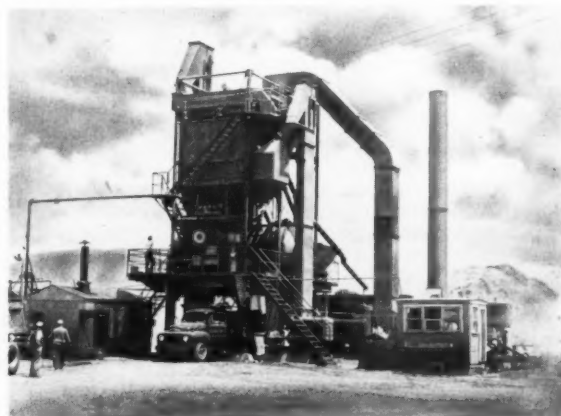
BIRMINGHAM MANUFACTURING COMPANY, Inc.

P. O. Box 2838, Birmingham, Alabama

YES, Simplicity has the biggest capacity, BUT



The SIMPLICITY Model S-100, 10' x 20' Simplicity double-shell dryer; 5' x 14' double-deck vibrating screen, 5000-lb. weighing and mixing systems. Diesel powered. Rated capacity, 100 tons per hour.



The SIMPLICITY Model S-80, 8' x 12' Simplicity double-shell dryer; 4' x 12' double-deck vibrating screen, 5000-lb. weighing and mixing systems. Diesel powered. Rated capacity, 75 tons per hour.



THE TWO PLANTS ABOVE WERE PHOTOGRAPHED IN OPERATION ON THE NEW JERSEY TURNPIKE.

PICTURE BOOK ON REQUEST

We have a book "Simplicity in Pictures." It tells the facts about Simplicity Plants, where they are and who owns them. A copy will be sent you free on request.

Simplicity has so much more **DEPENDABLE CAPACITY** than any other asphalt plant that it is almost automatic to think of Simplicity in terms of **BIG CAPACITY**.

Capacity is important. On a lot of jobs it is the difference between losing your shirt and making a fair profit. But in many instances there are other things about Simplicity plants that are equally important... or more important. For instance:

SIMPLICITY IS DEPENDABLE

"DEPENDABLE" has been Simplicity's slogan since its beginning. No other asphalt plant approaches Simplicity's record for **DEPENDABLE** operation.

SIMPLICITY IS DURABLE

Every Simplicity asphalt plant that has ever been built is still in successful operation.

SIMPLICITY IS ECONOMICAL

Simplicity plants produce better asphalt and more asphalt at less cost than any other plant.

SIMPLICITY SERVICE IS ALWAYS AVAILABLE

Service on plants in service comes first with Simplicity. We make nothing but asphalt plants and our men really know asphalt plants.

THE SIMPLICITY SYSTEM COMPANY

CHATTANOOGA, TENNESSEE

DEPENDABLE

• **AUXILIARY SIMPLICITY UNITS** such as feeders, dryers and mixers often improve and increase capacity of any make of asphalt plant. Currently available Simplicity asphalt storage and heating systems are important insurance for economically maintaining big plant capacity. Details on request.

Good Progress Made With Heavy Grading

Equipment Is Judiciously Employed on New Hampshire Road Project Where Muck, Rock, and Boulders Are Encountered

By WILLIAM H. QUIRK,
Eastern Editor

• **ALTHOUGH** the job is only 2.8 miles long, the new construction on the John Stark Highway in New Hampshire is about as stubborn as any that can be found in the Granite State, or in all of New England for that matter. Big boulders are liberally sprinkled in with the dirt, and the hard ledge rock stoutly resists the blasts of dynamite. Then for variety in the grading there have been muck deposits to be dug out and replaced with granular backfill.

The improvement is on State Route 103 in the town of Sunapee and Newbury, counties of Sullivan and Merrimack. It begins in Newbury near the Lake Sunapee station of the Boston & Maine Railroad, and just west of the intersection with State Route 103A. Skirting the southwestern shore of Lake Sunapee for 1½ miles, the road passes Mount Sunapee State Park, a year-round public recreational area equipped with a chair lift for skiers. The new work continues westerly beyond the intersection with State Route 103B, and terminates just beyond Mountain View Lake.

Construction got under way in November, 1950, after the New Hampshire State Department of Public Works and Highways awarded a contract for the improvement to the Frank W. Whitcomb Construction Corp. of North Walpole, N. H., on its low bid of \$440,000. The completion date is July, 1952. The calendar-time period was purposely stretched out because the contractor was required under the terms of the contract to suspend operations during the height of the recreation season which is during July and August and from December 15 to March 15. This conforms with New Hampshire's policy of keeping roads to its resort areas open the year round. Thus at the time of the greatest influx of visitors, motorists were not held up or delayed by construction activities, one-way traffic, or detours.

New Location

Built in 1921, the existing highway had a tar and gravel surface 20 feet wide. Severe frost heaves, induced in part by skimpy or nonexistent base material to take care of the drainage, had broken or cracked the pavement over most of the project. Slight distances were short, and the vertical and horizontal alignment left much to be

desired. In addition, there was a blind intersection and steep grade at a grade crossing of the B. & M. railroad.

A 1950 traffic count indicated the road carried an average of 888 vehicles daily; and it was estimated that this count would rise by 1960 to 1,200. The new road is designed for vehicular speeds of 50 mph, with a maximum curvature of 7 degrees and a maximum gradient of 6 per cent. Slight distances are lengthened, and vision improved.

Besides the general relocation of the highway, about 1,000 feet of track on

the Concord-Claremont line of the B. & M. was relocated at the lower end of the job. The railroad was shifted 60 feet into Lake Sunapee on a new embankment 32 feet wide. In conjunction with the State the B. & M. also improved its grade crossing in the interests of safety and smoother riding.

Typical Cross Section

A typical cross section of the new road shows a bituminous pavement 24 feet wide, and crowned from the center at the rate of ¼ inch to the foot. It is flanked on each side by 5-foot shoulders having a pitch of ½ inch to the

(Continued on next page)

25 YEARS EXPERIENCE

for **SATISFACTION**

Foundation

WELLPOINT SYSTEMS

RENTAL • SALES

SEND FOR LITERATURE

Foundation Equipment
CORPORATION

Long Island City 1, N. Y.
37-35 10th St.
EXeter 2-1100

Chicago, Illinois
2608 W. 111th St.
Hilltop 3-1545

YOUR CHOICE OF

3

GREAT B-TYPE SCRAPERS

B-113
(10 yd. struck,
14 yd. heaped)

B-170A
(16 yd. struck,
21 yd. heaped)

B-250
(22 yd. struck,
27 ½ yd. heaped)

EACH of these three Bucyrus-Erie B-Type Scraper models loads with the same "fountain" action that breaks up chunks and boils material up through to fill the bowl completely. Each hauls easily on big tires, and has the stability that comes with low bowl height, wide spaced rear wheels and proper weight distribution.

Each dumps fast and clean with the same positive rolling action—a type of ejection that requires less horsepower and thus permits dumping in higher tractor gear.

Each has the design refinements and strong construction throughout that mean extra ease of handling and servicing, extra yardage hauled, extra long life. Let your International Industrial Tractor distributor give you all the details on these modern scrapers.

BIG RED TEAM

WINS ON PERFORMANCE

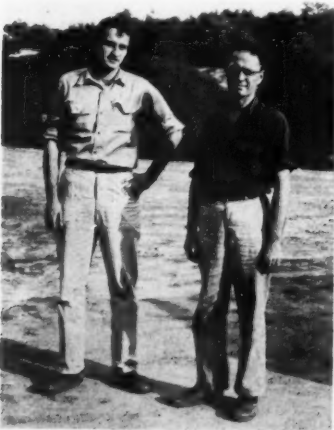
Time after time the Big Red Team, of TD-24 Tractor and B-250 or B-170A Scraper, comes out on top in field tests—hauling more yards, loading and dumping faster, completing cycles in less time than comparable units.



**BUCYRUS
ERIE**
SOUTH MILWAUKEE,
WISCONSIN

6752

See Your INTERNATIONAL Industrial Tractor Distributor



C. & E. M. Photo

Resident Engineer Al Shattuck (left)
and Superintendent John Fox.



C. & E. M. Photo

A Hough Payloader with a 1 1/4-yard bucket loads a Koehring Dumptor with topsoil that had been stockpiled for use around a rotary.

foot. In fills up to 10 feet high the slopes are 4 to 1; in higher fills the slopes are 2 to 1; most earth cuts are 1 1/2 to 1; in ledge the cut slopes are 1 to 2.

Over the entire roadbed is a gravel base course extending out to the slope lines. It is from 12 to 30 inches deep, depending on soil conditions. Where a 12 or 18-inch course was required, the gravel was laid in two lifts of 6 and 9 inches each. For the 30-inch base there were three 10-inch lifts.

The gravel is primed with tar to a width of 26 feet in preparation for the class C-2 road-mix pavement. The road-mix, 3 inches thick, is composed of crushed gravel and asphalt, which is then given a bituminous seal coat with peastone for the aggregate cover.

Winter Grading

Although the contract did not get under way until nearly the end of 1950, work continued through most of the 1950-1951 winter. Not until April, when the frost began leaving the ground, creating a sea of mud, was grading suspended. But in three weeks the earth had dried out enough for the contractor to resume operations. It had been expected either that the weather would close down the job or that traffic to the ski resorts would be so heavy the road builders would have to withdraw.

However, the snow was light, and the contractor so planned his work as to offer no obstacles to the small amount of winter traffic using the highway. It was cold, of course, especially at the lower end of the project where strong winds blowing over the frozen surface of Lake Sunapee made 20-below temperatures fairly common throughout the winter. During the subzero weather the frost in some areas penetrated to a depth of 4 feet. It was often necessary to drill holes in the frozen ground and use substantial amounts of dynamite to loosen the material in an area large enough for a shovel to get started.

Nearly 8,000 yards of muck were also removed during the winter over a 600-foot section of swamp through the new location just north of the railroad crossing. A dragline handled the excavation which averaged 12 to 15 feet in depth. The largest drainage structures on the project consisted of an 8 x 10 x 57-foot box culvert, twin 60-inch pipes 54 feet long, and the construction of an 8-foot extension on a 6 x 12-foot box culvert.

Rock Work

While the excavation item was un-

classified and totaled 161,260 yards in the estimate, some cuts contained a large percentage of boulders. And the rock on the job was a hard ledge, mostly granite. Drilling equipment for the blast holes consisted of four wagon drills—two Sullivans and two Chicago



C. & E. M. Photo

A traffic circle takes shape on the road to Lake Sunapee, New Hampshire. Workmen are setting a granite curb around it.

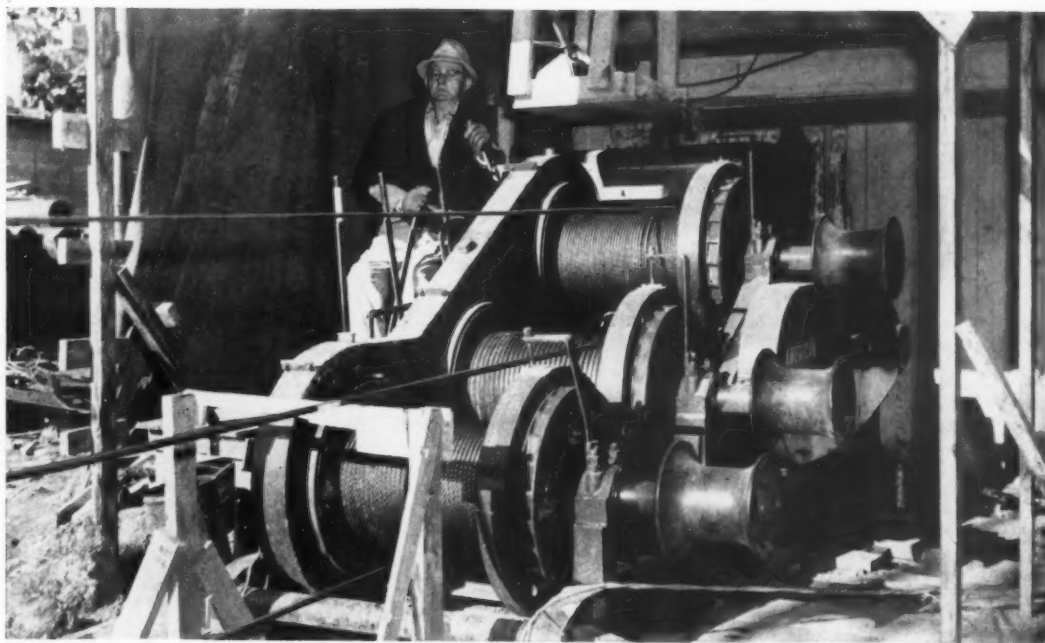
Pneumatics—and five Sullivan jackhammers. Five pneumatic compressors furnished the air—an Ingersoll-Rand 85-cfm; a Chicago Pneumatic 105-cfm; an I-R 210-cfm; a C-P 500-cfm; and a Le Roi 600-cfm unit.

The wagon drills used 1 1/4-inch drill steel in 6, 12, 18, and 24-foot lengths, with Timken carbide-insert rock bits

starting at 2 1/2 inches. Jackhammer steel came in lengths from 2 to 12 feet, and this drilling was also done with carbide-insert bits. Average spacing of the holes was 4 1/2 feet on centers both ways, and they were charged with American Cyanamid dynamite—both 40 and 60 per cent in sticks 1 1/4 x 8 inches

(Continued on next page)

"Nothing can touch them!"



WHY IS IT that some hoist operators seem more alert than others . . . make fewer mistakes . . . and move more loads, hour after hour? Ask H. A. Pepper. He's one of the best operators in Louisiana—shown above working on the swank New Orleans Mayflower apartments, for general contractor Chris Larsen Co., New Orleans.

This \$1,200,000 structure was built in less than a year; and all hoisting was handled by one American Model 75 General Purpose Hoist. Describing this

unit, Mr. Pepper said: "The American is the Cadillac of hoists; there is nothing that can touch them in operation, safety and long wear."

There is no substitute, of course, for the skill of a good operator. But you can make any good man a better man, and make some wonderful changes in your cost records, by investing in finest quality hoists. That means—buy American . . . the most complete line of hoists, the largest-selling line, the greatest money-makers you can own.



TWIN PRIME PUMPS

... Better performance

... Lower cost

DUAL VOLUMES, fast priming, non-clogging portable, long lasting centrifugal pumps. Distributors—write for attractive proposition.

OHLER MACHINERY CO.
WATERLOO 3 IOWA

Modernize...economize...with

American Hoist & Derrick Company

ST. PAUL 1, MINNESOTA

2101

Mail this coupon

American Hoist & Derrick Co.
St. Paul 1, Minnesota

• Please send catalog on

AMERICAN GENERAL PURPOSE HOISTS

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

Good Progress Made With Heavy Grading

(Continued from preceding page)

and 1½ x 12 inches. In spite of unusually close spacing of drill holes and the high dynamite ratio (pounds of dynamite used per yard of rock) the rock broke extremely large, requiring a lot of secondary drilling.

Up to 1,800 holes, containing 5 tons of dynamite, were shot at a time in removing a rock lift 24 feet deep. On the average, 1¼ pounds of powder yielded one yard of rock. One large rock cut had a width of 65 feet.

Varied Equipment

Excavators, either shovels or draglines, included a 1½-yard Link-Belt Speeder, a 1½-yard 605 Koehring, a 1½-yard Bucyrus-Erie, and a ¾-yard 304 Koehring; together with a ¾-yard 304 Koehring backhoe and a Bantam ¾-yard truck-mounted shovel. The latter two rigs were used mostly for drainage



C. & E. M. Photo

On the John Stark Highway job, a Link-Belt Speeder 1½-yard shovel loads dirt and boulders into a Tournarocker.

and cleanup work. Another machine used in a variety of assignments was a Hough Payloader equipped with a

1½-yard bucket.

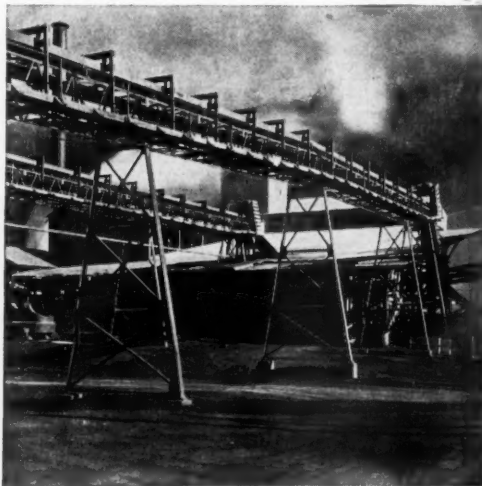
For a fairly short job some of the hauls were long, such as in the work

of backfilling the swamp area where the necessary material was moved an average of 1½ miles, partly over the relocation and partly over the existing highway which was still kept open to traffic. On the long hauls Whitcomb used two end-dump Euclids holding 10 pay yards, and two rear-dump C Tournarockers carrying 10 pay yards a load. Short hauls were taken care of by six Koehring Dumpsters, holding 6 to 8 yards, and a fleet of assorted hired trucks that at times numbered up to twenty.

The 35,000 yards of earth borrow that were required came from two pits—one right on the job and the other about ½ mile south of the lower end. All the hauling equipment worked the job pit, while only the trucks were employed in hauling material from the other source. Dozer work was handled by five International TD-18 tractors and a high-speed rubber-tired Tournadozer. Highest roadway fill was 29 feet and the deepest cut was 24 feet.

(Continued on next page)

HEWITT-ROBINS



A "Packaged Unit" to Meet Your Belt Conveyor Needs

The HEWITT-ROBINS SECTIONAL BELT CONVEYOR

Easy to Assemble

Pre-Engineered

Strongly Constructed

Here is the complete belt conveyor that will meet the requirements of both small and large operators handling bulk materials.

Easy to Assemble: Your own men can assemble, disassemble, move, extend or shorten it quickly and easily.

Take Your Choice: Select the right belt conveyor to fit your own particular needs—you have a choice of 3 types of drives—wide selection of intermediate truss lengths—your choice of idlers—(4", 5" or 6" diam.)—4' belt widths (18", 24", 30" or 36") in lengths up to belting limitations.

Factory-Assembly Units: All truss side members are factory-welded as complete units and are jig-drilled for easy erection—head and tail units completely assembled with machinery in place.

Standard Equipment: Self-cleaning, protective decking for return strand supplied for the entire conveyor line.

Optional Equipment: Hood covers—easily attached loading hopper.

Only Hewitt-Robins is able to take single unified responsibility for a belt conveyor installation—both machinery and belt.

Get the complete story. Write for Bulletin No. 132.

HEWITT-ROBINS  **INCORPORATED**

ROBINS CONVEYORS DIVISION

270 Passaic Avenue, Passaic, N. J.

GORMAN-RUPP SELF-PRIMING CENTRIFUGAL PUMPS AROUND THE WORLD



GORMAN-RUPP BUILDS MORE SELF-PRIMING
CENTRIFUGAL PUMPS FOR MORE USES THAN
ANY OTHER PUMP MANUFACTURER IN THE WORLD



For every requirement and range in capacity from 1000 GPH to the big 10 inch pumping 240,000 GPH the most dependable pump is the Gorman-Rupp.

They will pump more dirty water, more hours, with less fuel, will prime quicker and at higher suction lifts than any other comparable self-priming pump. And -- Gorman-Rupp pumps are guaranteed in plain language by us and our distributors.

Contractors' Pump Bulletin 8-CP-11 furnished on request.

A Complete Line of Engine Powered and Electric Motor Driven Self-Priming and Non-Self-Priming Centrifugal Pumps.

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO



In dumping all an operator mistook soft ground for hard and the rear wheels of his Tournarocker slipped into a hole 3½ feet deep. In such a predicament a rear-drive vehicle would have been stuck. However...



the operator locked its front wheels, turned them sideways to the body, and pulled on the rear wheels with the lower cable...



In a jiffy, the Rocker was out of the hole, and on its way.

C. & E. M. Photos

measured at the center line. In one sidehill cut along the lake front there is a difference of 100 feet from the center-line grade to the top of slope.

Getting Out of a Hole

A somewhat unusual feature for a road in New Hampshire was the large traffic circle built into State Route 103 at the entrance to Mount Sunapee State Park. The circle has a maximum diameter of 250 feet, and with its approaches has a total length of 1,415 feet along the main highway. The park entrance is off one side of the circle, while the road to Lake Sunapee Park beach and Route 103B are off the other side. The inside edges of the roadway at the traffic circle are lined with granite curbing totaling 4,400 linear feet. State maintenance forces will later paint the curb with reflectorizing paint. Topsoil will be placed in the center area for a width of 15 feet measured from the curb line, and the remainder of the center area will be mulched with hay.

The C&EMonthly camera was on hand when material from one of the big rock cuts was being used as fill in building the road to Lake Sunapee Park beach, which is included in the contract. The operator of one of the Tournarockers that was hauling a mixed load of dirt and boulders mistook some very soft ground for stable earth while backing up to discharge a load. The rear wheels of the 'Rocker slipped down into a hole 3½ to 4 feet deep. A rear-drive vehicle would have been stuck, but good, and would have required assistance to get out of the hole.

Not so the Tournarocker. Its operator continued to dump the load by tilting the body to full height. Then he locked the front driving wheels, turning them sideways to the body so as to prevent the machine from sliding backwards, and pulled on the rear wheels with the lower cable used in dumping. The rear wheels lifted right out of the hole, and in a jiffy the Tournarocker had spun around and was on its way back to the shovel for another load.

Gravel Base Course

Heavy summer traffic in 1951 forced construction to a halt from the early part of July until after Labor Day. The remainder of the grading and the

gravel base course was completed before the end of the year when operations were suspended for the winter.

Gravel for the base was hard to obtain, and involved a 2½-mile haul, all uphill, from a pit south of the lower end of

the project. Trucks loaded by a shovel did the hauling.

(Concluded on next page)

B.F. Goodrich



Rock tires enable contractor to recap — never before possible

LDLEWILD AIRPORT, the Brooklyn Battery Tunnel and sections of the New Jersey Turnpike are just a few of the large construction jobs undertaken by the Gull Contracting Co., Inc., of Flushing, New York. Rugged projects like these subject off-the-road tires on this company's 50 fifteen cubic yard dump trucks and 130 other vehicles to extreme abuse — mud, rock, slime and debris. Says William Gull:

"Normally our tires take so much abuse that by the time the tread wears off, the casings are so badly cut and bruised that we discard them. Recently we got over 275 working days on a set of B.F. Goodrich Rock tires with nylon shock shields. The walls and casings held up so well that the tires

were recapped. These tires are now in use and are performing excellently. This is the first time in 25 years of construction business that we were able to recap a set of tires."

And this company reports BFG tires give better traction and wear than other leading makes. The reason for such superior service lies under the tread rubber. There you'll find the nylon shock shield — an exclusive B.F. Goodrich development. Strong, elastic nylon cords stretch together under impact to shield the tire body from smashing road shock.

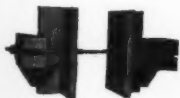
Off-the-road operators save money 4 ways because of this shield found in all BFG tires of 8 or more plies. More tires can be recapped for more miles

per recap. Tire mileage is increased, bruise resistance is increased and there is less danger of tread separation.

B. F. Goodrich makes off-the-road tires to meet your requirements and save you money. See your local dealer for complete details or write The B. F. Goodrich Company, Akron, Ohio.



NEW!—"HEX-LOCK"



The single-unit Clamp that permits easier tightening and loosening

Write for circular

WILLIAMS FORM ENGINEERING CORPORATION

1301 Madison Ave., S.E., Grand Rapids, Mich.

Good Progress Made With Heavy Grading

(Continued from preceding page)

The Mystic Bituminous Products Co. of Boston, Mass., primed the base course with T-4 tar applied at 150 degrees F in two applications of 0.5 gallon and 0.25 gallon each. Mystic hauled the bitumen up from Boston, and put it down with its own distributor, half width or 13 feet at a time. Whitcomb covered the tar with sand applied from a Good Roads spreader at the tailgate of a truck. It was spread evenly with a drag broom pulled by a Jeep with a four-wheel drive. The light weight and power of the Jeep were put to good use in the hilly country.

With the coming of good weather this spring, the contractor is returning to the project to complete the fine-grading and apply the priming tar to the drives, approaches, and the road to Sunapee Park beach. He will also put down

the bituminous road-mix and finish the project in advance of the expected heavy tourist traffic.

Quantities and Personnel

Major items included in the 2.8-mile highway reconstruction are as follows:

Clearing and grubbing	21 acres
Unclassified excavation	161,260 cu. yds.
Muck excavation	10,325 cu. yds.
Earth borrow	35,000 cu. yds.
Gravel	44,300 cu. yds.
Tar prime	50,300 gals.
Crushed gravel for pavement	8,500 tons
Asphalt cutback	102,000 gals.

Frank W. Whitcomb Construction Corp. employed an average force of 50 on the project under the direction of John T. Fox, Superintendent.

For the New Hampshire Department of Public Works and Highways, Fred Hansen was Resident Engineer at the beginning of construction. When he became Supervising Resident Engineer of several contracts on the reconstruction of State Route 9, he was succeeded by Al Shattuck as Resident Engineer.

The Department is now headed by

John O. Morton, Deputy Commissioner and Chief Engineer, who is Acting Commissioner. Robert H. Whitaker is Construction Engineer.

Device Locks Cord

A current-carrying device that prevents electrical cord from pulling out of the socket is made by The Arrow-

Hart & Hegeman Electric Co., Hartford, Conn. The Hart-Lock is installed like ordinary connectors, and locks by a twist of the cap in the connector body. It is said to provide a constant current supply for overhead connections, direct connection to machines, and long line assemblies.

Further information may be secured from the company, or by using the Request Card at page 16. Circle No. 929.

LARGE O.D. STEEL PIPE

NEW WELDED AND SEAMLESS

Available from stock

14" to 30" OD
Walls 3/4" to 1"
and heavier

Also 1/8" to 12" in standard, extra strong and double strong—Prime and Structural grades—any quantity.

We are specialists in solving the pipe problems encountered in the construction field—ask us to help—no obligation.

WRITE—WIRE—PHONE

MID-CONTINENT TUBE SERVICE 808 East 74th Street, Chicago 19, Illinois
Hudson 3-1307

CUT ROLLING COSTS

with *Essick* high compaction rollers



CHECK THESE EXTRA ESSICK ADVANTAGES!

• **Adjustable roller weight**—water ballast system affords variable compaction to fit particular job.

• **Profit-saving operation**—immediate direction change—no pause at end of run to mar blacktop and require expensive hand-labor work.

• **Speedy compaction**—Essick Road Rollers effectively work a larger area in a shorter time than any other rollers in their size range!

You can cut dollars off every rolling operation—whether paving a walk or a highway—when you use an Essick roller! They put the weight where it really counts, on the compaction roll!

Compare these compaction ratios with any other

Model	Tons	Compaction, lbs. per lineal inch.
200	1 1/2 to 2	60 to 110
300	2 to 3	110 to 148
400	3 to 4	105 to 160
500	3 1/2 to 5	156 to 200

SEE YOUR NEARBY ESSICK DEALER OR WRITE DIRECT

Sales and Service Coast to Coast and in Foreign Countries

ESSICK

Essick Manufacturing Company

1950 Santa Fe Ave., Los Angeles 21



NEW TOOL FOR THE CONSTRUCTION INDUSTRY

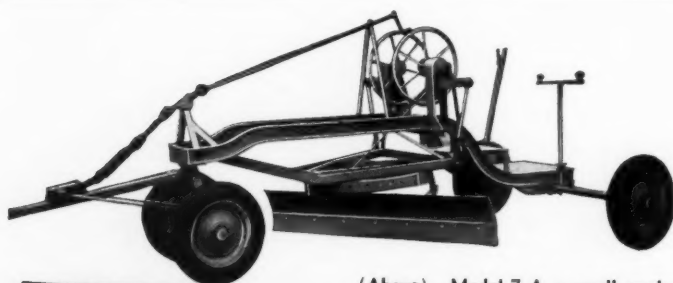
PITMAN HYDRA-LIFT

versatile inexpensive truck crane

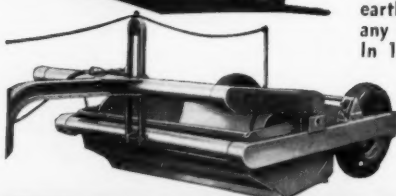
The new Pitman Hydra-Lift comes ready to install on the frame of any truck, 1 1/2 tons or larger. Hydraulic power swings boom 180 degrees, lifts boom 100 degrees. Boom telescopes from 12 to 22 feet. Lifting capacity is 6,400 pounds; requires only 40 inches behind the truck cab, leaving bed free for normal purposes. Write today for complete information on new Pitman Hydra-Lift!

PITMAN MANUFACTURING COMPANY

300 WEST 79TH TERRACE KANSAS CITY, MISSOURI



**2 GREAT
GLEDHILL
PERFORMERS**



(Above)—Model 7-A, a small grader but a big performer with many good features. Also, the Model 80, heavier, better for high banks with its longer reach.

(Left) — A compactly designed, strongly built, reasonably priced earth mover that can be used with any tractor. Has hydraulic controls. In 1-yd. and 2-yd. sizes.

Send for complete specifications, folder No. 552

THE GLEDHILL ROAD MACHINERY CO.
GALION, OHIO





Fred J. Driscoll, President of George F. Driscoll Co., New York general-contracting firm which celebrates its 50th anniversary this year. His father founded the firm.

N. Y. Contractor's Golden Anniversary

On April 1, 1902, young George F. Driscoll, a Brooklyn bricklayer, made a neat entry in his new cashbook: "This day Geo. F. Driscoll started in business of general contracting. Capital as follows: \$315.73 in bank; \$100 cash in pocket."

Today, Mr. Driscoll's two sons look back with pride to their father's modest start as a one-man organization. With pride, because George F. Driscoll Co. of New York City is now one of the outstanding general-contracting firms in the eastern United States. The Driscoll sons took over the direction of the firm when their father died in 1941; Fred J. Driscoll is now President and his brother George F. Driscoll, Jr., is Vice President.

Included in the major building projects the firm has completed are eight of the New York City Housing Authority's apartment houses; the U. S. Parcel Post Building in Long Island City; King's County Hospital Nurses' Home in Brooklyn; the Brooklyn Police headquarters; Jamaica and Hunts Point sewage-treatment plants; and the U. S. Navy Building at Arlington, Va. Driscoll has also done several foreign jobs, including the \$90,000,000 U. S. Army Air Base at Trinidad, British West Indies, during World War II; and various public and private building projects in Venezuela.

Fred Driscoll is an active leader in New York's building-construction industry and is second-term President of the Building Trades Employers' Association of New York City, an organization of 1,000 contractors. He belongs to many other building associations, and is a member of The Moles, an organization representing the heavy-construction industry.

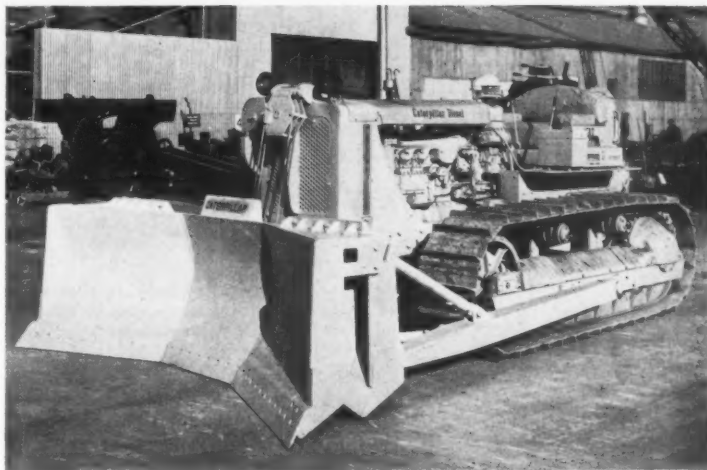
Chain Belt Executives

There have been several organizational changes at Chain Belt Co., Milwaukee, Wis., involving staff promotions. W. J. Sparling takes over the newly created post of Vice President and Manager of Milwaukee Operations, which gives him executive responsibility for the three major Milwaukee divisions — Construction Machinery,

Chain and Power Transmission, and Conveyor and Process Equipment. Mr. Sparling, who joined the firm in 1928, was Vice President and Manager of the Chain and Transmission Division prior to his new appointment. His successor as Manager of that division is M. G. Jewett, formerly its Chief Engineer. Mr. Jewett has been with Chain Belt since 1927 and has held various posts since then.

There have been several promotions in the Construction Machinery Division: B. F. Devine, Vice President and Manager, becomes a Staff Officer of the company and will serve in an advisory and consulting capacity. A. K. Thomas, formerly Sales Manager, takes Mr. Devine's place as Manager. W. A. Clayton, hitherto Eastern Regional Sales Manager, succeeds Mr. Thomas as Sales Manager. J. W. Lendved, formerly Chief Engineer, is Director of Engineering of the Division.

W. C. Messenger, Manager of the Ordnance Division, has been elected Assistant Secretary of the company.



Angle-wing attachments for bulldozer blades are made by Shepard Tractor & Equipment Co., Atlantic and Bandini Bldgs., Los Angeles 22, Calif. They are said to carry larger yardage, and are specially adaptable for side casting, backfilling, and hillside cutting. Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 927.

whatever move you make
you're a winner
with the **SEAMAN MIXER**



BITUMINOUS Plant mix quality at road mix cost.

SEAMAN Self-Propelled TRAVEL-PLANT. Equipped with spray bar, pump, full tachometer controls and volumetric meter (optional). Gas or diesel engine.

The principle of the superiority of SEAMAN-mixing is in the blending of all materials so uniformly that the strongest, highest load-bearing, wear and weather-resistant base is produced. Add to this the high daily output of mixed materials, the remarkably low operating cost and the small purchase investment required — and you will see why the SEAMAN is building more miles of better roads for the tax-dollar — than is possible with any other method of mixing. So it's your move. Make it a winner — with the SEAMAN MIXER.

SEAMAN MOTORS, INC.
282 N. 25TH STREET
Milwaukee 3, Wisconsin

MACADAM Perfect keying and interlocking of stone and distribution of fines with the SEAMAN.

GRAVEL SEAMAN-stabilization saves \$150.00 to \$500.00 per mile each year in maintenance and new gravel.

SOIL-CEMENT 15% stronger soil-cement bases with SEAMAN-mixing.

FREE! Comprehensive, detailed Bulletins on

- ☐ Bituminous Construction (No. 40)
- ☐ Soil Cement Construction (No. 50)
- ☐ Macadam Base Construction (No. 60)
- ☐ Gravel Stabilization (No. 65)

Check those you want — or write giving the Bulletin numbers. Do it today.



Project Tests Claims For Rubberized Roads

Seeks to Answer: Is Cost Justified by Longer Pavement Life, And Which Is Most Economical Rubber to Use?

By ROBERT E. STEELE, Director of Public Information, Virginia Department of Highways (on military leave)

• IT has long been claimed that the addition of a small percentage of powdered rubber brings new qualities of durability and safety to the bituminous wearing surface of a highway. A research project now under way in Virginia will help prove or disprove this contention. If the outcome is what the rubber industry confidently expects, future road builders may be highly dependent on an adequate rubber supply.

Proponents of rubber as a road-building agent say it gives a more durable bituminous mixture, one that is less susceptible to temperature change, and therefore one less likely to bleed at high temperatures or crack at low temperatures. Also, rubber is said to offer a smoother riding surface, a greater resistance to skidding, and less ice film at below-freezing temperatures.

Aware of the far-reaching implications of those claims, the Virginia Department of Highways in 1949 launched a major research project designed to determine the merits of rubber in highway construction and maintenance. The research division of the Virginia road agency is at Charlottesville where, in conjunction with the Engineering Department of the University of Virginia, it functions as the Virginia Council of Highway Investigation and Research. To this group, headed by Director of Research T. S. Shelburne, fell the task of setting up and carrying out the project.

Test Sections

The study was fashioned to probe into the relative merits of the three available types of powdered rubber: natural, synthetic, and reclaimed. Beginning in the summer of 1949, three field experiments were established. On U. S. 250, some 5 miles west of Richmond, a test section was built incorporating powdered natural rubber in the bituminous - concrete sand - asphalt

Virginia Dept. of Highways Photos



T. S. Shelburne is Director of Research for the Virginia Department of Highways. Here he runs his fingers through samples of reclaimed rubber (left) and natural rubber.

wearing surface. Nearby, a similar surface employing powdered reclaimed rubber was constructed. The following year saw an experimental section containing powdered synthetic rubber built on Route 302 near Charlottesville. Adjacent to the experimental sections, identical sections without rubber were constructed to provide a sound basis for comparison.

Each section will come under close scrutiny during the entire lifetime of the various pavements. Since the normal useful life of a high-type bituminous surface is generally at least seven years, it will be some time before definite conclusions can be reached. From an economic standpoint, two questions are of particular importance. (1) Will the life of the pavement be extended sufficiently to justify the cost of the rubber? (2) Which will prove the most economical—natural, reclaimed, or synthetic rubber?

The experimental sections are subject to close and frequent visual inspection. Road-roughness measurements are made regularly with the

single-wheel type of road-roughness indicator designed by the Bureau of Public Roads. Skid-resistance tests are made under various speeds and surface conditions, with individual measurements closely checked with repeat tests made under like conditions. Laboratory studies include density and stability tests, along with computation of the void percentage of cores from the experimental sections.

Results thus far, of course, are not conclusive. The experiment has clearly indicated, however, that it is entirely feasible to incorporate small percentages of powdered rubber in sand-asphalt mixtures. All sections, both with and without the rubber, are in good condition after one to two years of service and no significant difference between the test and control sections is apparent on visual inspection. To date all sections have a satisfactory skid resistance, though the rubber sections in general have had slightly shorter stopping distances at higher speeds. Sections containing natural and synthetic rubber appear to have lower average densities and higher average voids than their respective control sections, though the opposite has been true of the strip with reclaimed rubber. Virginia engineers are quick to point out that these are preliminary findings and may have relatively little long-range significance. Only after the passage of considerable time and traffic will the story be known.

There is a precedent for the Virginia study in experiments with rubber-asphalt which other countries have conducted, chiefly the Dutch, in Holland and the East Indies. Most of the foreign experiments employed hand methods, but in order to tailor its study for maximum value to mechanical-minded state, city, and county road agencies, Virginia built its test sections with machine methods.

Natural-Rubber Section

The first section that was built is a natural-rubber test strip 1,000 feet long. (Continued on next page)



A test mold of rubber, asphalt, and crushed stone is started in the Department lab.



The mixture is tapped into mold form.



Then the mold gets a hot-water test bath.



The lab man determines its specific gravity.



Broken down, its makeup is clearly seen.



Here a field test section is being laid on U. S. 25 using powdered natural rubber at the rate of 6 per cent by weight of asphalt.

with binder course and a bituminous-concrete sand-asphalt wearing surface on top of an old plant-mix surface. The road is 30 feet wide, with an average daily traffic volume of 3,500 vehicles, about one-quarter of which are trucks and busses. The aggregate used (¾-inch maximum size) was 50-50 natural sand and granite screenings. The amount of asphalt was set at 7 per cent and the rubber content at 6 per cent by weight of the asphalt—about 0.42 per cent by weight of the total mix.

The mixture was produced in a Simplicity plant of the stationary pugmill type. Rubber powder for each batch was dumped into the pugmill along with dry aggregate previously heated to 300-315 degrees. After the rubber and aggregate were mixed for 15 seconds, the asphalt, heated to 215 degrees, was added and the mixing was continued for 45 seconds.

The existing road surface was cleaned and a tack coat of asphalt applied, followed by a bituminous-concrete binder. As soon as the binder course was completed in each lane, it was covered immediately with the wearing surface containing the rubber. An attempt was made to lay the wearing course as thin as possible, averaging 62.5 pounds per square yard for the rubber test section, 65.5 pounds for the control section. The latter, adjacent to the test section, was in all respects similar except that it contained no rubber. Both courses were placed by a Barber-Greene finisher and rolled by 7 and 12-ton tandem rollers.

Reclaimed-Rubber Section

The reclaimed-rubber test section and its control section were placed about ½ mile from the natural-rubber project. Thus the original surface and the traffic volume of the two are comparable. There were some differences in the construction materials used. The reclaimed-rubber test section and its control strip are each 500 feet long and contain an aggregate mixture of ¾ natural sand, ¼ crushed gravel. The asphalt content is 6.5 per cent, with 6 per cent reclaimed rubber. The rubber—coarser than natural rubber—was weighed, added, and mixed to the hot dry aggregate according to the same procedure followed with the natural rubber. After the old surface was cleaned and a tack coat of asphalt applied, the mixture was placed directly on the original road surface, with no binder course. It was placed by an Admire paver and applied at the rate of 124.7 pounds per square yard. Similar conditions obtained on the control section.

Synthetic-Rubber Section

The synthetic-rubber experimental section, built in the summer of 1950, is a brand-new road with an asphalt-primed base and a binder course. The top course (containing the rubber) is 20 per cent sand, 80 per cent stone screenings. Powdered synthetic rubber was added to the dry aggregate in the pugmill at the rate of 6 per cent rubber based on an asphalt content of 7.5 per cent. The paving material was applied at a rate of 80 pounds per square yard by a Barber-Greene finisher. The adjacent control section was built in the same fashion with the same materials, less the synthetic rubber.

During the construction of each section, detailed records were kept of the temperatures and workability of the various mixes. No difficulty was encountered in placing the mixtures containing synthetic or reclaimed rubber, but with the natural-rubber mix it was found that in order to prevent "pulling" it was necessary to operate the Barber-Greene machine at a slower rate (8 fpm) with the rubber than without (12 fpm). With the reclaimed rubber, particles of rubber were visible above the compacted surface immediately after rolling; however, most of these were whipped off by traffic.

Results So Far

The most important follow-up studies have taken the form of close visual observation, road-roughness measurements, skid-resistance tests, and laboratory studies of cores cut from the various sections.

Thus far, all sections are in good condition and there has been no difference in performance between the sections containing rubber and their respective control strips. Two longitudinal cracks about 25 feet long have developed in the section containing natural rubber. These did not enter the control section. Engineers theorize that possibly they were caused by the presence of an old ditch or a widening at the time the road was reconstructed as a three-lane pavement.

Road Roughness

Road-roughness measurements thus far have indicated little significant difference between the rubber and the control sections. Only long-range trends will be of conclusive value since

initially both the rubber and the control sections were of the same relative smoothness. After a year or so of operation, tests indicated a considerable difference in the roughness of the outside lanes and the inside or passing lanes of the three-lane pavement—but the greater roughness of the outside lanes was due, of course, to the nature of traffic rather than to construction materials.

Skid Resistance

One of the primary benefits claimed for the use of powdered rubber in asphalt mixtures is that it improves the skid resistance of the surface. Thus, many of the nation's road builders have followed with close attention Virginia's frequent skid-resistance tests. The tests are made with a standard automobile under varying conditions of wet and

(Concluded on next page)

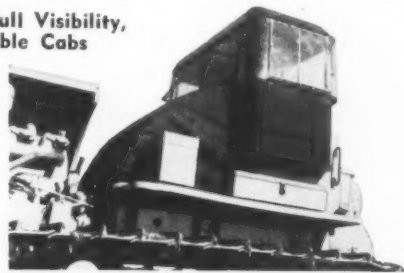
For Full Protection and Full Visibility, Install Campbell Detachable Cabs on your Tractors

No work stoppage due to bad weather when you use Campbell Cabs

Cabs available for other tractor models

Cabs handled by your industrial tractor dealer

Campbell Detachable Cab Co.
WAUCONDA, ILLINOIS



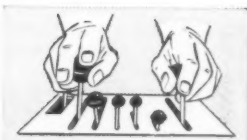
Only LINK-BELT SPEEDER Shovel-Cranes give you Power hydraulic controls



**LINK-BELT
SPEEDER**

Here's the only power hydraulic control system available in shovel-crane equipment. It's fully hydraulic with hydraulic pressure power generated by pump driven from engine (not manually)—no air or vacuum devices—no frequent clutch adjustments—no jumps, jerks, lag or balky action. Ask your nearest Link-Belt Speeder distributor how Speed-o-Matic power hydraulic control lets fingers instead of muscles do the work . . . cuts operator fatigue, steps up production and profits.

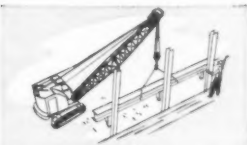
Here are LINK-BELT SPEEDER PLUS FEATURES that work for you



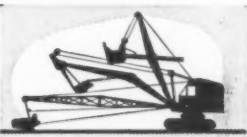
Speed-o-Matic full hydraulic controls—power driven! Boost production up to 25%. Keep operator fatigue down.



Eliminates up to 150 parts—cuts friction, no worn bushings, pins, links or clutch toggles to put you "down."



Pinpoint Accuracy—eliminates lost motion. Instant hydraulic response assures spotting heaviest loads—easily, precisely.



Convertibility—designed for peak production as shovel, crane, dragline or trench hoe. Convert in field—quickly, easily.

LINK-BELT SPEEDER CORPORATION

Builders of the most complete line of shovels, cranes and draglines
CEDAR RAPIDS, IOWA

12,853-A

Project Test Claims For Rubberized Roads

(Continued from preceding page)

dry surface at speeds of 10, 20, 30, and 40 mph. Measurements are computed from the spot at which the driver brakes his vehicle to the stopping point.

With the road surfaces dry, very little variation has been noted in stopping distances. Under wet surface conditions, only minor differences were observed at the lower speeds, but at 40 mph, stopping distances on the natural and reclaimed-rubber surfaces have been consistently less than on their respective control sections. For no obvious reason, results have been varied on the synthetic-rubber pavement surface.

During one test at 40 mph on a wet surface, stopping distance on the section with natural rubber was 87.5 feet, compared with 101.2 feet on the control section without rubber. Three other tests at other times but under the same conditions revealed differences of 5.8, 7.3, and 1.3 feet—all in favor of the section with rubber.

One wet-pavement 40-mph test on the section containing reclaimed rubber showed a stopping distance of 77.8 feet, compared with 87.6 on the adjoining nonrubberized control section. Differences were less pronounced at other times on the reclaimed-rubber experimental project.

Since the synthetic-rubber section was set up a year after the others, only two skid-resistance tests have been run. The first showed a 6.7-foot difference in favor of the section with rubber, the second a 3.4-foot difference in favor of the nonrubberized control section.

Commenting on these tests, Virginia engineers point out that it is not possible to perform them under absolutely identical conditions at different times since in some cases there is a difference in cars, in drivers, and in tire and weather conditions. Also, the presence of oil spots on the surface varies. Thus only long-range trends will establish the real picture. All sections, rubberized or not, came well within the AASHO standards for safe stopping distances.

Density, Stability

In laboratory studies, Virginia's Council of Highway Investigation and Research has computed the void percentage of cores cut from the various sections and has run careful density and stability tests. Sections containing natural and synthetic rubber had lower average densities and higher average voids than their corresponding control sections; the section containing reclaimed rubber, however, had a higher average density and lower average voids than its control section. These studies indicate that reclaimed rubber may somewhat improve density and lower the percentage of voids while natural and synthetic rubber may have just the opposite effect.

The density and voids in bituminous concrete are particularly important physical characteristics; in general the mixtures with higher densities have higher stability since deterioration from air and water are more rapid.

Most of the surface cores from the test sections were too thin to permit stability tests. None were possible on the natural rubber, and there was no significant difference between the stability of cores from the synthetic-rubber section and from its control area. The stability of cores from the reclaimed-rubber section was definitely higher than that of cores from its control strip.

All of these tests will be continued during the useful lifetime of the respective pavements, and results will be recorded in meticulous detail and

reported regularly. With a vital stake in the project, cost-conscious and safety-minded highway engineers throughout the country are closely watching developments.

Personnel

The studies are being conducted under the immediate direction of T. S. Shelburne, Director of Research for the Virginia Department of Highways and Head of the Council of Highway Investigation and Research. Plans and policies are formulated by the administrative board of the Council, composed of C. S. Mullen, Chief Engineer of the Virginia Road Department, Chairman; Charles Henderson, Dean of the Department of Engineering of the University of Virginia; and Mr. Shelburne. Members of the Council staff working directly on the rubber studies include R. L. Sheppe (now on military leave), A. W. Maner, F. B. McNeely, J. H. Dillard, R. W. Rhoe, and engineering graduate students of the University of Virginia.

Becherer Is L-B President

Robert C. Becherer, former Executive Vice President, is the newly elected President of Link-Belt Co., Chicago, Ill., to succeed George P. Torrence, who is retiring from active service. Previous to his election, Mr. Becherer as well as William J. Kelly, President of Machinery & Allied Products Institute, was elected a Director of Link-

Belt, thus increasing the number of directors from 12 to 14. All the 12 former directors were re-elected, including Mr. Torrence, who will serve as a member of the Executive Committee.

Mr. Becherer joined Link-Belt in 1923; in 1947 he was appointed General Manager of the company's Ewart Plant in Indianapolis; in 1951 he became Vice President, and later in the year, Executive Vice President.

MARVEL

CONCRETE VIBRATORS

1 1/2 H.P. to 5 H.P.

The standard with contractors
for many years.

GV-1, GV-2, & GV-3 MODELS NOW EQUIPPED WITH AUTOMATIC CENTRIFUGAL CLUTCH AS STANDARD EQUIPMENT

Write for full information

MARVEL EQUIPMENT CORPORATION
215-217 EAGLE STREET BROOKLYN 22, N. Y.

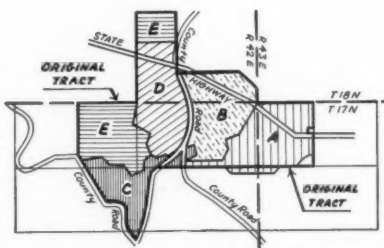


The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

How to Please the Ladies



"Surveying country subdivided into townships, ranges and sections seems, on first thought, to offer few problems," writes F. W. Welch of Pullman, Wash. "But this rectangular system, ideal for prairie states, does not lend itself to the rolling hills of 'the Inland Empire'—the wheat and pea belts of eastern Washington State."

"Here, to approximate contour farming, farmers have traded land back and forth, eliminating steep slopes and hard pulls. As a rule, no records are kept, causing problems when old-timers pass on. Heirs usually specify that a tract be divided to 'farm right'—meaning lines must run up valleys, over saddles between hills, and provide a spring and building site for each.

"Recently I had to divide 1,000 acres among five girls in this manner. The land lay in four townships, two ranges and six sections; was cut by a state highway and four county roads. The highway and one road had been relocated; and there were two unrecorded property exchanges for convenience in farming.

"I tackled the job with a Gurley Solar Transit (the new Land Office type). Distances were measured by slope chaining with 300-ft. tape

and Abney level, and reduced to horizontal by use of a versine table. Directions were read by true azimuths, using the backsight method, with solar checks every three or four setups.

"We discovered that original surveys were made with a solar out of adjustment. While Government notes read, 'Thence I run due north,' the line was actually N. 3°50'E. A mile, measured by steel tape, never agreed with one measured way back in 1878 with a worn-out Gunter's chain.

"Outer boundaries were run, Lats and Deps and D.M.D.'s computed, and area plotted. Trial division lines were then run and acres computed. Result: Each girl received 200 acres ± maximum of 1/2 acre...Everybody satisfied."



Pleasing the Surveyor

"A lot of the credit goes to the Gurley Transit," says Fred Welch, Asst. Prof., Civil Engineering (Ret.), State College of Washington. "My Gurley, purchased four years ago, is still in perfect adjustment."

You, too, will find the Gurley Transit an accurate aid. Bulletin 50 gives all details.

We would like to publish one of your field experiences on this page. Send us your idea—we'll contact you later for details.

W. & L. E. GURLEY, FULTON & STATION STREETS, TROY, N. Y.

Surveying and Engineering Instruments, Hydraulic Engineering Instruments, Standard Precision Weights and Measures, Paper and Textile Testing Instruments, Reticle Making Facilities, Aeronautical Navigating Instruments, Meteorological Instruments.

GURLEY

Surveying and Scientific Instrument Makers
Since 1845

Iron-Curtain Scientists "Invent" Asphalt Finisher

As every schoolboy knows, it was Russian scientists and engineers who invented radio, electricity, television, heavier-than-air craft, and beet borscht. The Kremlin now announces a new triumph of Soviet engineering genius: development of the asphalt finisher. The fact that the Russian machine bears a striking resemblance to the Barber-Greene Model 879-A finisher is merely coincidence, of course.

The following is a portion of the Russian technical report, with appropriate notations by Barber-Greene:

"A group of designers of the Lenin-grad branch of the All-Union Scientific Research Institute of Building of the Road Construction Administration worked out in 1948 the design of the D-150 asphalt-cement finisher, an experimental model of which was constructed by the Experimental Works of the Ministry of Road Construction at the beginning of 1949."

Poor spy system . . . took almost 12 years to steal all the plans.

"The machine was proved suitable for the purpose of laying asphalt-cement."

By 1949 we were pretty sure ours would work, too.

"The factory tests were performed in Bryansk in September, 1949."

Aurora, Illinois, USA, in 1935.

"The D-150 will be used in the construction of motor roads and road repair work."

Now there's a novel application.

"It can also be combined with a mobile mixer and the self-propelled T-61 loader, thus creating an original combine for road building and mixing on the site of the work."

Ivan, you've been peeking. You must have seen our Travel Plant at the Road Show in 1930.

Improved Receiver

A new simplified radio communications receiver with fourteen standard tubes has been developed by Communications & Electronics Division, Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Ill. Used with 2-way mobile radio systems, it has five different tube types. Previous models required 16 or 17 tubes.

The components and wiring have been simplified so that all terminals and service points are fully available without removing or relocating other components or wiring. This new unit is fully interchangeable with previous models now in operation, and is being supplied in all current shipments.

Spurious and image response has been improved. The control oscillator circuit is said to maintain increased stability over wide voltage fluctuations and is tunable over greater frequency ranges than previous models.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 882.

New Power Takeoff

A split-shaft power takeoff is made by Cemco Industries, Inc., First National Bank Bldg., Galion, Ohio. It operates as a section of the driveshaft



A Cemco split-shaft power takeoff drives this Jaeger Travel-Air compressor.

so that V-belts or sprockets turn at the shaft's rpm in forward or reverse position.

With it, trucks of 1½ and 2-ton rating

deliver approximately 50 brake horsepower at 1,700 to 1,800 rpm. The takeoff can be installed directly back of the cab or as far as 45 inches back of

it, depending on the length of the chassis and wheelbase. The company points out that with a Jaeger Travel-Air compressor, the takeoff makes possible a standard maintenance body plus an air compressor with tools.

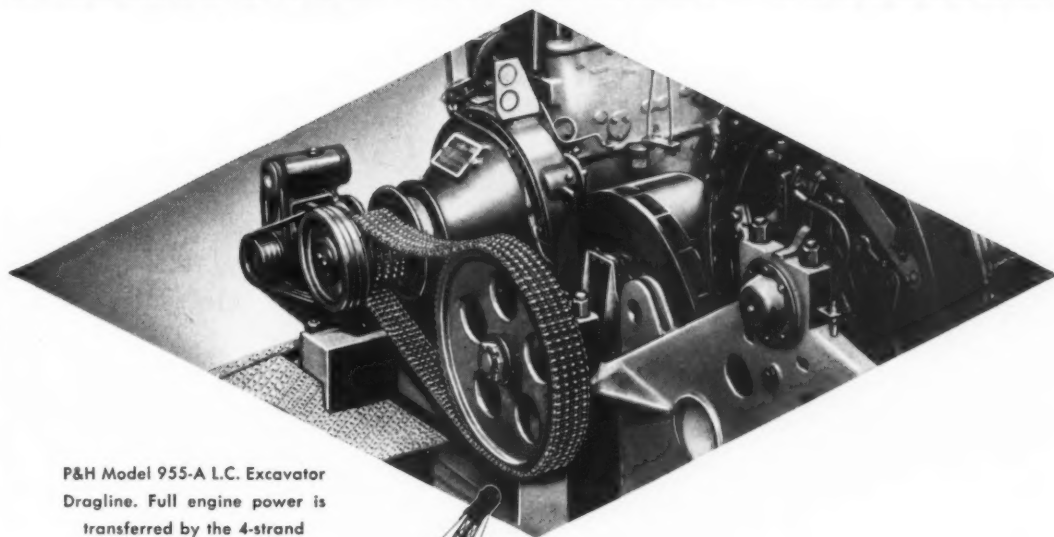
Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 908.

Bulletin on Wheelbarrows

A catalog on the American line of wheelbarrows, hand trucks, and concrete carts is announced by The American Steel Scraper Co., Sidney, Ohio. It illustrates and gives complete specifications on the concrete, general-purpose, stone, and utility barrows, which are made with both tubular-steel and wood frames. The company also makes 6½ and 9-cubic-foot-capacity concrete carts.

This literature may be obtained from the company by requesting Bulletin No. 16, or by using the Request Card at page 16. Circle No. 906.

Where only the best will do ... DIAMOND ROLLER CHAINS



P&H Model 955-A L.C. Excavator Dragline. Full engine power is transferred by the 4-strand Diamond Roller Chain.

● Where only the best will do, high efficiency, long-life, uniform quality Diamond Roller Chains are the choice of leading equipment manufacturers and contractors.

Experience has shown that lower operating costs and higher yardage output depend to a great extent upon dependable, economical Diamond Roller Chain power transfer. Minimum maintenance, minimum down time, and maximum service life under the most severe conditions is the matchless reputation that Diamond Roller Chains have earned by serving the construction industry for the past 40 years.

DIAMOND CHAIN COMPANY, Inc.

Dept. 487, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DRILLING CONTRACTORS

Diamond and Shot Core Borings
Dry Sample Borings
Grout Holes and Pressure Grouting
Foundation Testing for Bridges, Dams
and all Heavy Structures

also

Manufacturers of Diamond and Shot
Core Drills, Accessories & Equipment

SPRAGUE & HENWOOD, INC.

Dept. C, Scranton 2, Pa.



DIAMOND

**ROLLER
CHAINS**

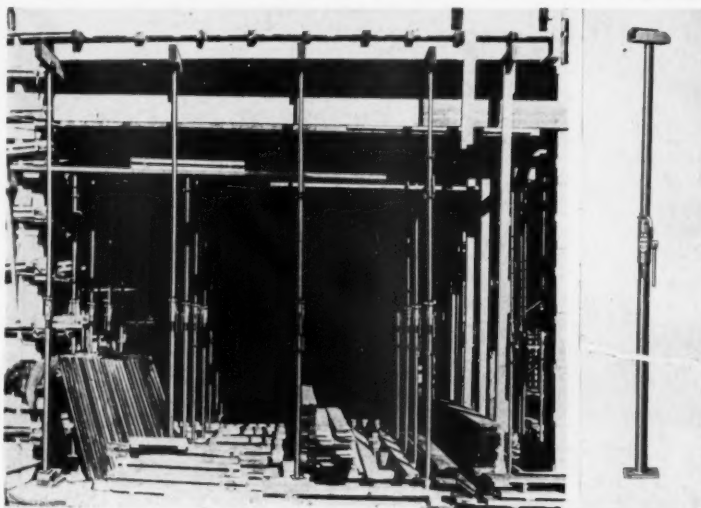


Telescoping Shore

A self-contained telescoping steel shore that is handled by one man and permits fine adjustment is announced by Safway Steel Products, Inc., 6234 W. State St., Milwaukee 13, Wis. Three sizes cover a range from 6 to 15½ feet above the mounting surface; each has a 5-foot range of adjustment. Load-carrying capacities as high as 9,900 pounds are made possible by a special sleeve-nut design.

For rough adjustment, the upper telescoping member is raised to approximate height and held by inserting a pin through one of the holes spaced every 6 inches along the tube. The pin is attached by a chain and ring to prevent loss. Final adjustment is then obtained by rotating a threaded sleeve nut, thus elevating the head to the exact height required. A fine-adjustment range of 6 inches is available at a rate of ¼ inch per turn.

The modified Acme-type thread of the elevating screw is tested to 40,000



At left, the Safway telescoping shores, extended 15 feet 3 inches, on a building job done by C. E. Meyer Construction Co., Oshkosh, Wis. At right, a closeup showing the 8-inch U-head rough-adjustment pin, sleeve nut, and box plate.

pounds. For firm support, 2¼ inches of thread are engaged at all times. The sleeve nut is said to protect the threads from damage, concrete, etc.

The U-shaped head plate is designed for locating 4-inch lumber or lapped 2-inch lumber on edge. No nailing is required under normal conditions, but staggered nail holes are provided for use when desired. The standard U-head is 8 inches long, making it possible for two 4-inch timbers to be butted together. Safway shores can be furnished with 14-inch U-heads for beam formwork. The base plate is 7 inches square, making it possible for the shore to stand upright without other support.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 895.

Flexible Metal Hose

Flexible metal conduit and hose with four types of braids are made by Flexible Metal Hose Mfg. Co., 640 W. 17th St., Costa Mesa, Calif.

Cal-Flex has a convoluted inner core which is said to prevent stresses due to work-hardening. To eliminate stresses inherent in the raw material, the inner core is relief-annealed in the second manufacturing process. It is then compressed and pressure-tested. For extra protection, bronze wire braids are applied over the compressed inner core.

Cal-Flex is made in six sizes from ¼ to ¾ inch and can withstand pressures from 12 to 72 psi.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 912.

Asbestos Pipeline Felt

A booklet on tar or asphalt-saturated asbestos felt for protection of pipelines is available from The Philip Carey Mfg. Co., 316 S. Wayne Ave., Cincinnati 15, Ohio. On-the-job illustrations show how the felt is wrapped mechanically over the hot bituminous coating.

The flexible material, saturated with selected coke-oven tars or an asphalt compound, comes in widths from 2 to 45 inches and roll lengths from 50 to 2,200 feet. It can be used on pipes from ½ to 90 inches in diameter.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 891.

How U. S. Rubber belt engineers cut installation costs



View of 24" U. S. Giant Conveyor Belt carrying aggregate from mixing hopper to loading hopper in plant No. 2. Builders Supply Co., Houston, Texas.

Junction between cross belt and incline belt. They convey the aggregate to concrete mixing tower, which in turn supplies the waiting trucks.



PRODUCT OF



In a new concrete mix plant, original plans called for the installation of a 5-ply, 36 oz. duck conveyor belt to handle the aggregates. But United States Rubber Company engineers pointed out that their 4-ply, 42 oz. duck belt would not only cost less, but would be more flexible crosswise to trough, would train more easily and provide high-tensile strength as well. This 1,275-foot, 4-ply U.S. Giant Conveyor Belt was installed. It travels 300' per minute and delivers 294 tons per hour.

This is another instance of why it pays to consult "U.S." engineers before going ahead on a conveyor belt problem. Remember that they are backed by a wealth of experience and vast research facilities. Finally, they will work with your engineers and with the designers of conveyor equipment—a 3-Way Engineering teamwork that always pays off in higher output at lower cost. Write to address below.

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

flamefoil
CANVAS FINISH

... best for your tarps, covers, windbreaks

RESISTS WATER . . .



plus FLAME
MILDEW
WEATHER

Approved by the Underwriters' Laboratories, New York Bureau of Standards and California Fire Marshall. Meets or exceeds all FTC requirements.

*Manufactured under Patents Nos. 2,044,175 and 2,299,612 others pending.

SEND FOR ILLUSTRATED BOOKLET "FLAME RESISTANT FABRICS"



PHILADELPHIA
TEXTILE
FINISHERS
Incorporated
104 Lafayette St.
Norristown, Pa.

Prestressed Bridge Goes Up Fast, Easy

New Design and Techniques Developed Along American Lines Simplify and Speed Building of Prestressed-Concrete Bridge

By MICHAEL A. SPRONCK,
Associate Editor

THE basic design of the John R. Road Bridge is simple. A series of factory-made I-shaped concrete blocks, prestressed by two steel cables, form 41-foot beams set side by side to span the Red Run flood-control drainage channel in Royal Oak Township, Mich. Construction was equally simple. A dozen men, in all, set the blocks, grouted them, prestressed the two cables, and raised the finished beams to place on column caps.

Red Run Drainage Board, an inter-county commission in Michigan, is the proud owner of the new structure. Widening of the Red Run channel northeast of Detroit required that a new bridge be built at the intersection of the drain and John R. Road. The latter is an important artery in the Oakland County highway network and it was important that the structure be completed as fast as possible.

The Board selected Johnson & Anderson, consulting engineer of Pontiac, Mich., to design the new structure. Current steel shortages and limited time allowed for construction necessitated the engineers' unique design in prestressed concrete. L. A. Davidson, of Lansing, Mich., got the contract for the 130-foot 3-span structure on a low bid of \$99,220.

Precast Blocks Cheaper

Clair Johnson and Felix Anderson had been interested in the application of prestressed concrete for structures in the U. S. before they designed the John R. Bridge. Their studies indicated that precast concrete was cheaper than cast-in-place concrete for this type of work—substantiating the experience of R. H. Bryan, consulting engineer from Nashville, Tenn., in his design of a smaller bridge for similar use in Tennessee (C.&E.M., August, 1951, pg. 88, Col. 4). Their design, however, features I-shaped blocks rather than the hollow rectangular blocks used on the earlier bridge.

Standardization: Key to Design

The new 130-foot structure has three spans, an intermediate and two end spans, designed for an H-15 loading. Identical beams are used for all spans. The blocks are alike except for the four at each end of the beams and the two depressor blocks at each of the third points. (See photos on page 35.) The odd-shaped blocks at the ends and the third points align the prestressing cable in a bowl-like shape along the length of the beam. This is necessary to produce the eccentricity of the prestressing force near the center of the beam where the moment due to loading is large.

The machine-made I-shaped blocks are 23 3/4 inches deep, 15 3/4 inches wide, and 7 3/4 inches thick. The top flange is 3 3/4 inches deep and the bottom flange is 2 3/4 inches deep. The web is 2 1/2 inches wide and joins the flanges at a straight 45-degree angle 2 1/2 inches from each flange. The blocks were cast with a 3/8-inch-deep lip around the sides and bottom of one face to contain the mortar poured between adjoining blocks when the beam was formed.

The end blocks and depressor blocks are essentially rectangular in shape. Two 3 1/2-inch holes through the end blocks carry the prestressing cable through the beam center line at the end

points. The outside face of the end blocks is tapered so that the cable pull is perpendicular to the block face. A notch low on each side of the depressor blocks holds the cable down near the bottom of the beam through the middle third of the span.

Two 1-inch-diameter galvanized bridge strands exert the prestressing force on the blocks—one on each side of the I-block webs. John A. Roebling's Sons Co., of Trenton, N. J., made the cables and the specially developed end fittings. The prestressing steel was pre-



C. & E. M. Photo

The fourth prestressed-concrete bridge in the U. S.—John R. Road Bridge over Red Run drainage channel in Michigan. A Lorain 40 Moto-Crane handles a bucket of wearing-surface concrete at the center span.

fabricated in the company's plant and shipped to the job ready for use. This permitted a simple and rapid prestressing by center-hole hydraulic jacks.

Twenty-two standardized beams and two fascia beams, laid with the flanges abutting, support the 24-foot roadway

(Continued on next page)

THE STEEL CORD TIRE



unbeatable
for
STRENGTH!

- 1 it withstands punctures, road shocks and cuts.
- 2 it withstands abrasion chipping and wear.
- 3 it prevents spinning action, cause of cuts on muddy terrain.
- 4 it can be used without speed limitation.



the MICHELIN
"METALIC" Y Tire

MICHELIN TIRE CORPORATION, 341 East 62 nd St, NEW-YORK 21, NY



Johnson & Anderson Photo

A Lorain 40 Moto-Crane places the center span of the bridge. Note the steel I-beam spreader to assure vertical lift at the end points of the beam.



C. & E. M. Photo

Left to right: Project Manager Andy Zynda, Ken Davidson, Consulting Engineers Felix Anderson and Clair Johnson, and Job Superintendent Aubrey Polly.

FOR FASTER DRILLING...

SCHRAMM Pneumafeed



WITH SCHRAMM Pneumatractor

Even "hard-to-please" operators are enthusiastic about the Schramm *Pneumafeed*. When the *Pneumafeed* is mounted on a Schramm *Pneumatractor*, it becomes a self-propelled wagon drill, a combination that replaces big, cumbersome wagon drills for building new roads, widening and improving old roads, eliminating gradings and sharp curves, and many other construction engineering jobs.

Pneumafeed employs the hard-hitting Schramm DR-45 Drifter for drilling at any angle, vertically or horizontally. With a travel of seven feet, it goes fast in either direction. Drilling pressure is adjustable according to deposit worked.

For the many advantages offered by the *Pneumafeed*, in combination with the Schramm *Pneumatractor*, write us today.

Ask for Bulletin STB-51

SCHRAMM, INC.

The Compressor People

WEST CHESTER

PENNSYLVANIA

SCHRAMM CONSTRUCTION TOOLS

ROCK DRILLS
WAGON DRILLS
PAVING BREAKERS
CLAY SPADES
TRENCH DIGGERS
TIE TAMPERS
Pneumafeed
Pneumajack
BACKFILL TAMPERS
TRACK SPIKE & FORM PIN DRIVERS
VIBRATORS
AIR GUNS
PNEUMATIC SAWS
PRUNERS
BITS
DRILL RODS
AIR HOSE
COUPLINGS

Prestressed Bridge Goes Up Fast, Easy

(Continued from preceding page)

and 3-foot sidewalks on each side. Transverse prestressing cables, 0.6-inch galvanized bridge strand, tie the beams together at the ends and the third points of each span. The top corners of the beam flanges are notched to form a 1 x 1/2-inch keyway when the beams were placed side by side. A 3-inch-minimum reinforced-concrete wearing surface poured over the beams thus serves to distribute the load and unite the members as an integral structure. The bridge also features a replaceable prestressed-concrete railing, the first in this country.

Building the Substructure

Davidson started to work on the substructure in June, 1951, right after the Army Corps of Engineers had completed the Red Run channel dredging. Two two-column pile bents on spread footings support the bridge.

The concrete crew laid a 6-inch concrete mat on the channel bed as a working surface for the footing forms. Carpenters back at the central yard in Williamston meanwhile made up the forms with DeWalt radial-arm saws and a couple of portable Skilsaws, and sped them to the job site by truck. A crawler crane up at the top of the channel slope took the panels off the hauling truck and lowered them to job carpenters. The men worked fast, wary of the potential flash floods that could raise 16 feet of water in the channel in a few hours.

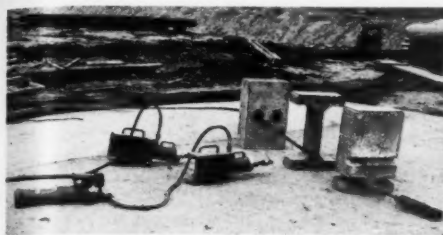
The footings are 10 feet wide, 32 feet long, and 2 feet 6 inches deep. The 3 x 3-foot RC columns are set 20 feet apart on each footing. Each column has an 8-foot 6-inch bullnose on the upstream face for proper water-flow characteristics. The pier caps are 36 feet out-to-out, 3 feet wide, and 3 1/2 feet deep. Plywood-faced panels were used on all exposed surfaces; old plywood or boards did the trick on the unexposed portions. The 2 x 6 studs, 12 inches on centers for exposed areas and

(Continued on next page)

IT'S LIGHT IT'S FAST

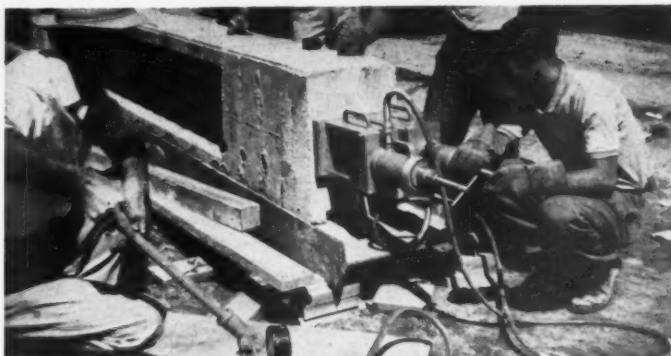
IT'S THE
AMAZING
LOMBARD 16" SAW
Does wonders in the woodlot
Dealer Opportunity \$265.
LOMBARD, Ashland, Mass. Dept. 7

★ SCHRAMM AIR COMPRESSORS ★



C. & E. M. and Johnson & Anderson Photos

The mock setup above shows the end, I-shaped, and depressor blocks used to form the beams of the bridge—also the line of the prestressing cable and the Simplex center-hole hydraulic ram and pump used for tensioning. At right, a beam being prestressed. At the far right, the end of a finished beam.



16 inches on centers for unexposed surfaces, held the panels. Standard double 2 x 6 wales and Williams form accessories completed the bracing.

Forms Washed Out

Old Man Weather took direction of the job once or twice during form erection. Flash floods washed away the 8 to

10-foot low-flow clay dike and some of the formwork, too. As soon as the water subsided, Davidson's men moved in again using an old standby K & E transit to realign the forms. This little battle was repeated three times before the men won out and got the concrete poured and set.

Frank Knight, of Centerline, Mich.,

supplied the concrete in 4½-yard transit-mix trucks. A Lorain crawler-mounted 41 working at the top of the slope swung a 1½-yard Blaw-Knox bucket over to the truck, picked up the concrete, lowered it to the forms, and then swung back for the rest of the batch. Davidson had the Lorain tail-weighted with a 2-ton counterweight to

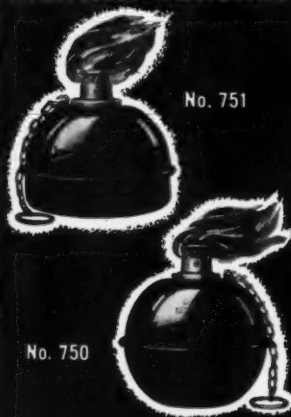
assure safety for the 25-foot reach to the forms. A Master gasoline-powered vibrator worked the mix tight against the forms and down below all the steel. The use of a Sinclair pale paraffin form oil made stripping easy the following day. A 1 : 2.2 : 3.8 mix with a 2.3 water-cement ratio fulfilled the spex

(Continued on next page)

EMBURY

offers
Protection Plus!

Luck-E-Lite HIGHWAY TORCHES



- Weather Guard Burner—stays lighted
- Cam-Lock Burner Hood—no threads to strip
- Easy to Fill
- Ring Chain—for easy carrying and placing
- Two models—Flat base or self-righting

For more Luck-E-Lite facts and nearest distributor, Write

EMBURY MANUFACTURING CO.
WARSAW, NEW YORK, U. S. A.

EMBURY
TORCHES & LANTERNS



It's smooth, smooth going on the Detroit Express Highway

**FLEXCELL*
JOINT FILLER**
keeps joints
smooth, tight,
maintenance-
free!

Detroit Express Highway
Detroit, Michigan



WHEREVER CONCRETE meets concrete, Flexcell Bituminous Fibre Expansion Joint Filler assures durable, trouble-free joints that stay neat and smooth—need no maintenance!

MILLIONS OF TINY air cells in the cane fibre base of Flexcell permit it to absorb pressure from expanding concrete without extruding—spring back to keep the joint closed when concrete contracts. This prevents bulges and bumps, does away with gaping crevices.

LOW IN FIRST COST, Flexcell Joint Filler is easy to handle, easy to work with. Gives neat, finished joints without trimming. Protected by the patented Ferox® Process from dry rot and termite

attack. Impregnated with asphalt to resist moisture. Withstands severest service and climatic conditions—saves on maintenance year after year!

THESE ARE THE REASONS why Flexcell has long been specified by leading engineers, contractors and architects, as well as the U. S. Army, Navy and many other Federal, State and Municipal agencies.

SO BEFORE YOU BEGIN another job, investigate the advantages and economies of using Flexcell Joint Filler—for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors. You'll be glad you did. Mail coupon today for full data.

Another **CELOTEX** Product
FLEXCELL
REG. U. S. PAT. OFF.

BITUMINOUS FIBRE EXPANSION JOINT FILLER

The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

*Flexcell is a Trademark identifying Bituminous Fibre Expansion Joint Filler marketed by The Celotex Corporation.

—MAIL COUPON TODAY—

The Celotex Corporation, Dept. CEM-52
120 S. LaSalle St., Chicago 3, Ill.

Without obligation, please send me complete data and prices on Flexcell Bituminous Fibre Expansion Joint Filler.

Name _____

Address _____

City _____ Zone _____ State _____

Prestressed Bridge Goes Up Fast, Easy

(Continued from preceding page)

requirements for a 3,750-pound concrete on the substructure. A hand-rubbed finish on all exposed surfaces gives the bridge a sea-foam-white appearance.

Building With Blocks

The essential techniques for building a prestressed bridge such as the John R. are so simple as to be almost revolutionary. Davidson demonstrated that the job could be done simply and

quickly with only a few men, most of whom had never even heard of prestressed concrete.

Standard Building Products Co., of Detroit, made the blocks on a Besser Vibrapac, forming one block on each pallet. All units required for the job were made in a single production run. Only the tapered end blocks had to be handmade.

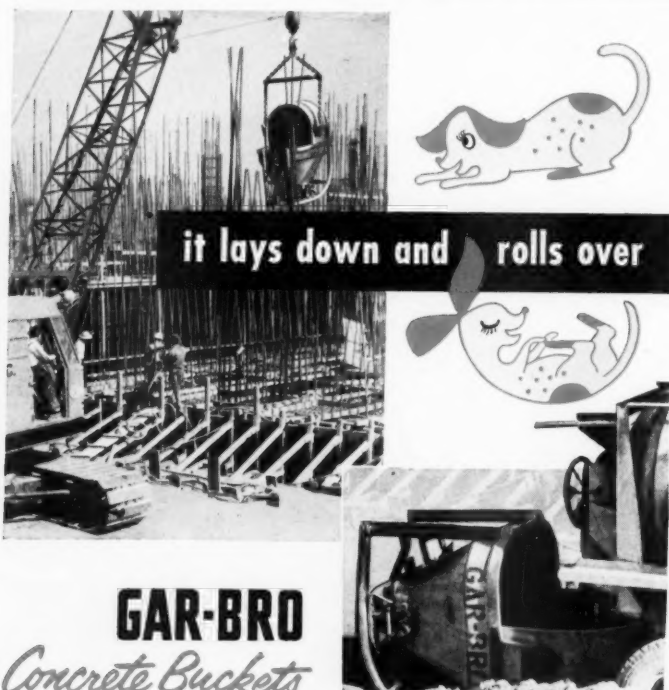
Standard shipped the blocks on flat-bed trucks. At first many of the blocks arrived on site broken. Davidson corrected this by having the blocks shipped in smaller loads with each block laid along the axis of the truck to eliminate the effect of the bow in the truck bed. The unloading crew quickly discarded platform unloading in favor of a rope sling which was faster and easier. They slipped the rope around the web of a dozen I-blocks, signaled the crane to hoist away, and guided the load over to the "beam-forming" templates.

Steel I-beams salvaged from the old bridge and laid on their sides served as

templates. The workmen set each block on the web of the steel and then shoved it tight against the inside of the beam flange. The row of blocks thus took on the shape of a laminated concrete I-beam. This was O. K., but there weren't enough steel beams on the site to set up a real assembly line for mass production of the prestressed members, so the John R. Road itself became an assembly line. Workmen laid a series of 3/4-inch marine-plywood panels on 2 x 6 boards right on the road surface. Other 2 x 6's, nailed to the upper surface of the plywood, formed the block-aligning straightedge. Lag bolts through the boards and the plywood enabled the men to level the entire surface to a true horizontal plane.

After a complete row of blocks were on proper line and set as tight as possible by hand, workmen ran the prestressing cables through the end blocks and along each side of the I-block webs. They tucked the cables into the de-

(Concluded on next page)



it lays down and rolls over

GAR-BRO
Concrete Buckets

SPECIALLY DESIGNED FOR direct handling of concrete from truck mixers the Gar-Bro Laydown Bucket automatically rolls to a horizontal position when landed on the ground so even a low-discharge mixer truck can dump into it.

When lifted it automatically rocks up to a vertical position. Has patented, self-closing, double clamshell gate. Laydown Buckets are available in four sizes 1 to 3 yd. capacities. There are 30 models of Gar-Bro Buckets ranging in capacity from 9 cu. ft. to 8 cu. yds. for handling every type of concrete. *Get the facts; write for information today.*



GAR-BRO MANUFACTURING COMPANY
2415 EAST WASHINGTON BLVD., LOS ANGELES 21, CALIF.

for faster concrete handling



YOUR MANGANAL DISTRIBUTOR IS ...

A Dependable Source
for all Manganal Products

Look to him for advice to save you time and money on the repair and rebuilding of heavy equipment.

MANGANAL
U. S. Patents 1,876,738 - 1,947,167 - 2,021,945

11% -13½% Manganese-Nickel Steel

- Applicator Bars
- Wedge Bars
- Special Shape Applicator Bars
- Hot Rolled Plates
- Special Tite-Kote & Bare Welding Electrodes and Hard-Surfacing Welding Electrodes

Write TODAY for **FREE** Literature on the latest methods for Speedy and Economical Repair of Worn Equipment.

Name of Nearest Distributor Upon Request. Send for catalog and price list.

STULZ-SICKLES CO. **SOLE PRODUCERS**
92 N. J. Railroad Ave.
Newark 5, New Jersey

HEAVY-DUTY TRENCHER

WITH NEW IMPROVED SELF CLEANING BUCKET — Capacity ½ yd.

A heavy-duty trench digger, which is designed for a wide variety of trenching for any highlift tractor with hydraulic bucket control.

It will increase the tractor's production from 30 to 50 per cent. and is easily attached with one man in 15 minutes.

The Whitestown trencher is equipped with a ½-yard standard bucket. Special buckets, made to individual specifications, may be obtained. It will dig to a depth of 8 feet and dump at a height of 12 feet. This trencher has been in constant use for four years, and has proved to be rugged and satisfactory in every way.

• Immediate delivery can be made.



The Whitestown Trencher is now available for use on the following hydraulic controlled tractors:
Allis-Chalmers HD-5G equipped with TS-5 tractor-shovel
Caterpillar D-4 and Tracton HT-4; Oliver with 4-A Lull loader
International TD-8 & TD-9 equipped with new Bucyrus-Erie dozer-shovel
International TD-8, TD-9 & TD-14-A with Hough bulldozer-shovel
Hough Model HM-Payload; Trojan Loader, Models LM-75; LC-100-B

• Please specify make of tractor.

WHITESTOWN TRENCHER CO., INC.

Wood Road, Whitesboro, New York

Phone: Utica 6-2430



HOTEL STRAND

A PERFECT HOTEL FOR YOUR CONVENTION GROUP

The STRAND, one of Atlantic City's Finest Boardwalk hotels is splendidly equipped to be a gracious and efficient host to every requirement of your convention group.

Ample meeting halls, display rooms, private dining rooms, all combined with complete hotel service and a selected personnel to cater to your every want.

For Special Rate Plan
Address Convention Manager
Hotel Strand, Atlantic City, N. J.

pressor notches, fitted the hydraulic jacks to the ends, and put on a small tightening load to make sure the blocks were snug.

Grouting the Blocks

The idea of the little lip on the face of each block was a good one. It meant that the blocks could be spaced and cemented together simply by pouring a grout into the opening at the top edge between the blocks. (This is contrasted with the job in Tennessee where each block was buttered with mortar and set $\frac{3}{8}$ inch from the previously placed block.) The saying was easier than the doing, however. The lip "spaced" the blocks properly, but it wasn't formed well enough to hold a grout.

At first Davidson used a local blue-clay plaster to fill in the breaks on the lip, but the engineers were worried that some of the clay might be getting into the space between blocks and therefore requested that a straight mortar be used to seal the "holidays". A little later it was shown that the clay didn't go in, but by then it was six of one, half dozen of the other, so they continued with the mortar.

The actual grouting was a fast operation. A man started at each end of the beam, poured the joints between blocks half full, and then returned to fill them up. This prevented too high a head pressure on the filled-in lip. The grout was made up in a Jaeger 1-sack mixer. The formula was one sack of Peerless high-early cement to 5 gallons of water, with enough sand added to bring it to a thick cream consistency.

Prestressing: Quick and Easy

A 1,000-pound initial stress on the beams filled up the voids and squeezed excess water out of the joints. Though the load fell off very quickly, it could not be reapplied. The mortar was still wet and contact of high spots on the block faces would have pushed the blocks out of line or broken them at the contract points. Wetted fabric, kept on for three days, assured an adequate cure.

The two Simplex center-hole hydraulic rams, actuated by a single pump, prestressed the steel fully on the fourth day. A series of deft strokes on the pump handle brought the total load on the beam up to 105,000 pounds. Anchorage nuts run up on the end-fitting stud secured the cables against the end-bearing plate. The engineers checked cable elongation against the pump reading to make certain that the cable was not "hung up" at some point. There was no problem of friction at the depressor points.

Davidson crews had high praise for the Americanized method of prestressing. The new Simplex rams, a modification of Templeton, Kenly's standard hydraulic jack, neatly held the Roebling cable fitting and tensioned the strand with little manual effort. Prestressing took less than 15 minutes per beam (in contrast with European work).

Crane Places Beams

A Lorain 40 Moto-Crane lifted the prestressed beams from the templates and set them on the pier caps. Two cables looped over the anchorage nuts formed the simple sling. A steel I-beam spreader on the sling assured a nearly vertical lifting force on the ends to avoid negative forces in the new beams. The crane's longest reach with its $5\frac{1}{2}$ -ton load was 40 feet. It set first the end span near the beam assembly line, then the center span, and then the other end span.

A $\frac{1}{4}$ -inch steel plate covers the pier caps. The 8 x 14 x $\frac{1}{4}$ -inch load plates under each beam permit free expansion of the bridge at the piers. The beams rest on a $\frac{3}{4}$ -inch joint filler at the abutments and are grouted to 1-inch dowels.

As the crane lowered each beam into place, workmen carefully threaded the

transverse prestressing cables through holes at the ends and third points of the beam. They mortared the longitudinal joints between beams, set wood screeds and bar-mat reinforcing for the deck pavement, formed the facias, and then poured the top surface and facias as an integral mass. Transit-mix trucks brought in the concrete. As the concrete fed from a bottom-dump bucket onto the decking, the workmen hand-finished the pavement to a minimum 3-inch surface. They used a 5-foot float, checked it with a 10-foot straightedge, and then burlapped to a smooth finish.

The same jacking setup, slung over the bridge sides, served for the transverse prestressing. The load was taken up to 27,000 pounds at each of the transverse prestressing points. The sidewalks were poured later and the bridge railing set in place.

Novel Bridge Railing

The new three-bar railing is prestressed, too—the first one in this country, it seems. The rails, $7\frac{1}{2}$ inches wide

and $3\frac{1}{8}$ inches deep, were prefabricated in 10-foot lengths in the Lamar Pipe & Tile Co. plant in Saginaw, Mich. An aluminum sheath covers the joint of the rails at each post to give a pleasing effect of continuity. A $\frac{3}{4}$ -inch dowel bar that slides down into the post holds each of the rails in a slot formed in the post. The dowels can be removed and the rails taken out and replaced if they are damaged in any way.

Personnel

The John R. bridge was completed in November, 1951. L. A. Davidson did the job with about a dozen men. Andy Zynda was Project Manager; Aubrey Polly, Job Superintendent. Felix Anderson and Clair Johnson were the designers and field representatives for the Red Run Drainage Board, headed by John Hudson, Chief of Drainage, Michigan Department of Agriculture.

Do your sealcoating and ice control jobs the fast easy Swenson way. Spreads salt, chloride, sand or cinders any width or amount desired.

Free Information

Swenson Spreader & Mfg. Co.
Lindenwood, Illinois



Here's how you

Cut Costs

ON ALL SHORING OPERATIONS

When you select ACROW Shores you save on materials—you save on time—you save on labor. ACROW Shores are easily set and accurately adjusted by only one man. Instantly adjustable from 5' 7" to 15' in their range of four sizes, ACROWS eliminate cutting, wedging, and fitting. There's 100% salvage—because ACROWS are all-steel and adjustable, and waste due to reprocessing wood shores is eliminated. Use them again and again—on any construction. ACROW Shores are simple to strip and telescope compactly for storage or transport.

Adjustable Steel

ACROW

Self-Cleaning Shores

GENERAL SPECIFICATIONS

Shore Sizes, Dimensions, Weights, and Capacities

Size No.	Height		Weight in lbs.	Failing Load		Recommended Safe Working Load	
	Fully Closed	Fully Extended		Fully Closed	Fully Extended	Fully Closed	Fully Extended
1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2 1/2 in.	12 ft. 5 1/2 in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5225 lbs.	2050 lbs.

Acrow Patented Self-Cleaning Feature

Always ready for instant use. A spur-tooth extension of the collar nut extends over a segment of the threaded tube. Turn collar handle and the encrusted concrete, dirt, and grit are cleaned away. (Illustration above.)

World's Largest Selling Shore

ACROW, INC. Dept. CE-5
510 North Dearborn Street, Chicago 10, Ill.
Gentlemen: Please send me the following free bulletins (Please Check).

☐ Acrow Shores ☐ Column Clamps ☐ Trench Jacks

Name

Company

Address

City Zone State

UNITED STATES OFFICES

Chicago, Michigan 2-1010
New York, Lexington 2-7595
Boston, Devonshire 8-7174
Philadelphia, Locust 7-5553
Atlanta, Emerson 3716
Houston, Underwood 8514
Dallas, Riverside 6051
Birmingham, 7-5151
Los Angeles, Lomita 2889
San Francisco, ATwater 2-1442

ASSOCIATE COMPANIES

Acrow (Engrs.) Ltd., London
Acrow (Canada) Ltd., Montreal
Acrow Engrs. (Pty.) Ltd., Johannesburg
Acrow (Pty.) Ltd., Sydney
Acrow Venezuela S. A., Caracas
Acrow Brazil S. A., Rio de Janeiro
Acrow Uruguay S. A., Montevideo
Acrow Argentina S. A., Buenos Aires
Acrow Peru S. A. (Ingenieros), Lima

ACROW
Gives You ...

- 4 size ranges for every application
- All-steel construction—lasts indefinitely
- Easy in stripping—compact portability
- Head types for every construction job
- Adjustment handle on every shore

Easily set and adjusted by one man

Over 1,000,000 now in use

Exclusive self-cleaning feature

6" x 6"



A self-contained die head is the feature of the Ridgid No. 500 pipe and bolt-threading machine.

Pipe-Threading Unit

A pipe and bolt-threading machine with self-contained die head is announced by The Ridge Tool Co., Elyria, Ohio. The new Quadritype die head of the Ridgid 500 can be adjusted to thread 1 to 2-inch pipe without removing either the die or the head from the machine.

All tools in the new series cut and ream independently and swing out of the way when not in use. The thread oil system is entirely concealed. The chuck has 6 adjusting pinions with one always in sight. The machine is powered by a universal forward-reverse 115-volt electric motor which supplies ample power for threading 12-inch pipe when geared tools are used. It comes in bench and stand models, with or without wheels. Mono and duo-type die heads for threading pipe from 1/4 to 2 inches in diameter are also available from the company.

Further information may be secured from the company. Or use the Request Card that is bound in at page 16. Circle No. 920.

Info on Centrifugal Pumps

A 12-page catalog on self-priming centrifugal pumps has been issued by Homelite Corp., 71 Riverdale Ave., Port Chester, N.Y. It includes on-the-job photos and stresses these features of the pumps: carryability, fast self-priming, automatic seepage control, high suction lift, nonclogging design, maintained rated capacity, and discharge pressure. The catalog also gives brief specifications and data on the built-in gasoline engine.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 943.

Pioneer Builds Jaeger BP-5

Pioneer Engineering Works, Minneapolis, Minn., subsidiary of Poor & Co., Chicago, Ill., has purchased from Jaeger Machine Co., Columbus, Ohio, the exclusive right to manufacture Jaeger's Model BP-5 bituminous paver. Pioneer will build the new equipment in its Minneapolis plant and distribute it through Pioneer distributors. Addition of the paver rounds out Pioneer's line of bituminous equipment, which includes aggregate feeders, dryers, gradation units, mixers, and dust collectors. The Jaeger deal is the second major change in the company's operations since Pioneer was purchased by Poor & Co. in 1950. The first was acquisition of the Rotary Snow Plow Co., Minneapolis, in June, 1950.

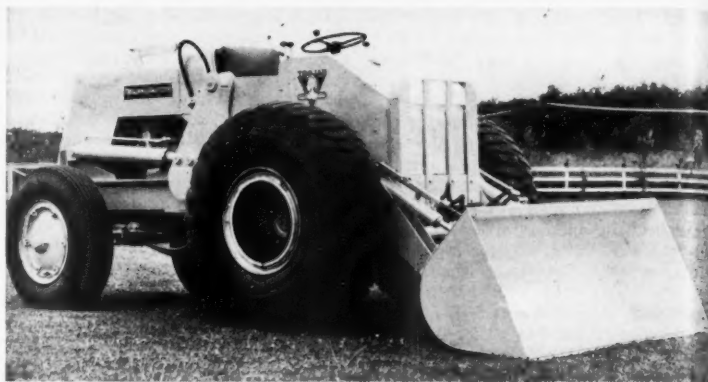
Pioneer also announces the establishment of an Eastern Sales Office at 94 Clinton Ave., Newark 2, N. J., in conjunction with Kensington Steel Co., Chicago, another subsidiary of Poor & Co. The new sales office will serve the entire northeastern section of the United States, and personnel operating it include: Roger Lewis, Pioneer Mines and Cement Plant Representative; and Wilbur Ellis, Kensington Eastern Representative.

Front-End Loader

A front-end loader with 1 1/4-yard bucket is manufactured by Contractors Machinery Co., Batavia, N. Y. Powered by a 66.5-hp engine, the Model LC-100-B Trojan Loadster loads over the drive wheels to provide greater traction. The drive tires are 18.00 x 21 and the steer tires are 11.00 x 20.

The reverse-curve bucket arms provide access to the large operator's compartment and permit unobstructed vision. Bucket action is independent of hoist speeds and the low load-carrying position increases machine stability. The unit weighs 13,700 pounds.

Further information may be secured from the company or by using the Request Card at page 16. Circle No. 925.



New member of the Trojan Loadster line—the Model LC-100-B. Its bucket capacity is 1 1/4 yards. The unit weighs 13,700 pounds.

NOW!... a Revolutionary



Chrysler Industrial Engineers Again Shatter Precedent! Develop Advanced Design With Larger Bore and Ingenious New Overhead Valve Arrangement! Make Long-desired Hemispherical Combustion Chamber Practical For Mass Production Methods

To the long list of Chrysler "Engineering Firsts" now is added another!

For many years, engineers have known that the Hemispherical Combustion Chamber produces the highest volumetric and thermal efficiency, exceptionally good combustion characteristics, and had excellent adaptability to high compression ratios. But all previous attempts to incorporate this design into a mass-produced engine had been unsuccessful.

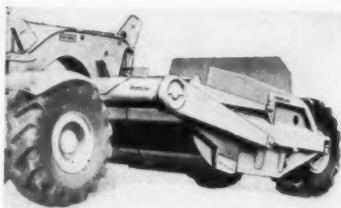
After five years of intensive research, Chrysler Engineers attained this goal.

With only 2.3 per cent more displacement, this mighty new Chrysler Industrial V-8 delivers 33 per cent greater maximum horsepower and a 16 per cent higher maximum torque. Its performance is incredible. Its fuel economy is outstanding. Its durability unexcelled. In operation, it is amazingly smooth and quiet. Over-all efficiency is tremendously increased.

Pair of New Scrapers

A pair of new scrapers for use with the DW10 tractor are announced by Caterpillar Tractor Co., Peoria 8, Ill. The No. 10 has a capacity of 7 cubic yards struck and 9 cubic yards heaped. For heavier applications where a pusher is more important, there is the No. 15 with a capacity of 10 cubic yards struck and 13 cubic yards heaped. For increased capacity, top extensions may be attached to either scraper where the material does not exceed a weight of 2,800 pounds per cubic yard.

The scrapers are similar in design. Both have a flat double-bottom bowl of high-tensile steel. A blade with reversible cutting edges is standard equipment. Cable rigging provides



Heavy-duty applications with the DW10 tractor are jobs for this new Caterpillar No. 15 scraper, which has a heaped capacity of 13 cubic yards.

positive loading and ejection, the company says. The wheels turn on tapered roller bearings, and air brakes are synchronized with the tractor brakes.

The No. 10 totals 15,440 pounds for

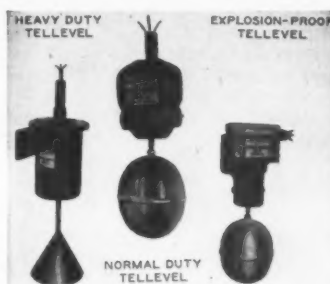
shipping and has a maximum carrying capacity of 11.5 tons. The larger model has a shipping weight of 17,850 pounds and a 17-ton maximum carrying capacity.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 932.

Electrical Controls

A booklet on electrical controls is issued by Cutler-Hammer, Inc., 12th and St. Paul Sts., Milwaukee 1, Wis. It describes and illustrates the company's line of safety and limit switches, magnetic equipment, and accessories.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 899.



With the addition of a heavy-duty and an explosion-proof model, the Tellevel line of bin-level control switches now includes three models.

Bin-Level Indicators

Two new Tellevel automatic bin-level control switches are announced by Stephens-Adamson Mfg. Co., Aurora, Ill. In addition to the normal-duty Tellevel, heavy-duty and explosion-proof units are being manufactured to meet special installation conditions. In all units a rising or falling level of material deflects a pendant float actuating a micro switch.

The explosion-proof unit is designed for operation in hazardous areas where explosive vapors and dust occur. The heavy-duty unit is recommended by the company where lump materials above 3/4 inch are being discharged to bins. It has a sturdy steel housing protecting the switch mechanism and the standard plastic float ball is replaced by a steel cone. A rubber cup at the base of the housing forms a dust and moisture-proof seal to protect the switch mechanism.

Tellevels are shipped ready for installation and require no maintenance, the company says. They are equipped with color-coded pig-tail connections for easy wiring. Units can be hung from pipe conduit for which all housings are tapped, or bolted to bin walls or plates by means of attached brackets.

Further information may be secured from the company by requesting Bulletin 11-0. Or use the Request Card at page 16. Circle No. 944.

Crane-Cab Ventilator

A split-type 3-hp cooler for crane cabs has been developed by Dravo Corp., Air Conditioning & Combustion Dept., Dravo Bldg., Pittsburgh 22, Pa. The C-3SP maintains a temperature of 80 to 85 degrees F within a crane cab when the surrounding temperatures reach 130 degrees F. Supplying continuous ventilation, it is equipped with electric strip heaters for winter heating, dust and dirt filters, and activated carbon canisters for fume and odor removal.

Operation and control are fully automatic. The small, compact evaporator section can be installed within the cab, while the condenser section may be located in any convenient place on the crane. The two sections are connected by refrigerant piping.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 897.

Preventing Welding Hazards

The health hazards encountered in welding operations are outlined in a 30-page booklet offered by Metropolitan Life Insurance Co., One Madison Ave., New York, N.Y. The company groups the types of hazards under electric shock and burns, radiant energy, gases, fumes, and dust. Exhaustion of oxygen, awkward postures, and the use of polluted cooling water may also cause injuries. Prevention of these hazards and treatment of possible injuries are discussed in detail.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 956.

NEW CHRYSLER INDUSTRIAL



**Most Sensational
Engine Ever Developed For
Industrial Power**

Yet, it has greater compactness and less weight.

Among its unique design features are a water jacketed throttle body that prevents "icing," integral automatic choke and double breaker ignition distributor.

This sensational new Industrial Engine will give you a whole new conception of industrial power and Industrial Engine performance.

Let us show you what it will do for you. See your Chrysler Industrial Engine Dealer, or if your job involves special engineering, write us direct. Marine and Industrial Engine Division, Chrysler Corporation, 12200 E. Jefferson Avenue, Detroit 31, Michigan.

CHRYSLER

Industrial Engines



Folder on Lubrication

A folder on lubrication of construction equipment is available from Gredag, Inc., Box 898, Niagara Falls, N. Y. It describes Gredag, a blend of grease and graphite, and recommends the proper grade for each equipment part.

The company points out that the graphite in the grease fills up the pores of metal, leaving a molecular film on the moving parts which eliminates metal-to-metal friction.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 890.



CONSTRUCTION BLOCKS

★ Guaranteed to carry rated loads for the life of the block!

Available in numerous sizes, capacities, and number of sheaves. All steel construction throughout. Bronze bushings or roller bearings for medium or high speeds. Sheaves grooved to proper line size.

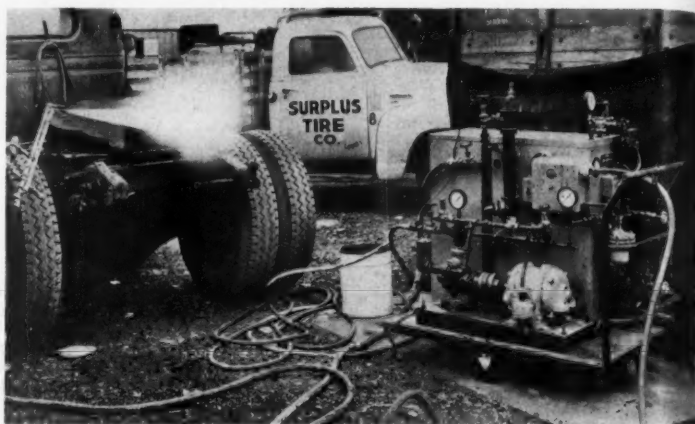
For real efficiency at low cost... McKISSICK BLOCKS ARE TOPS.

Catalog on request



McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma



The Speedyletric JC-50, for steam-cleaning heavy-duty equipment. It operates at steam pressures up to 200 psi and rinse-water pressures up to 400 psi.

Steam-Jet Cleaner

A steam-jet cleaner for heavy-duty equipment is announced by Livingstone Engineering Co., 100 Grove St., Worcester 5, Mass. The Speedyletric JC-50 operates at steam pressures up to 200 psi and rinse-water pressures to 400 psi. The built-in Speedyletric boiler Model 600-S3 (Underwriters' Laboratories listed and ASME Code) provides steam for the cleaning operation and rinse-water heating. The absence of smoke stacks, flues, or flames makes the cleaner free from fire hazards; moreover, it has no coils to burn out, or dangerous fuel tanks, and offers no low-water hazard.

The JC-50 produces 200-pound-pressure dry steam, detergent as needed, and 400-pound-pressure hot or cold-water jets—all under finger-tip control of the operator. It requires 3-phase power of not less than 30 to 40 kw—220, 440, or 550 volts—and a water supply of 250 to 300 gph.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 864.

Control-Instrument Merger

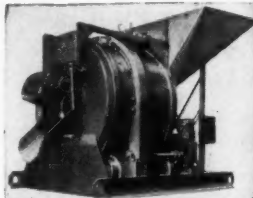
Barber-Colman Co., Rockford, Ill., manufacturer of automatic-control instruments, has purchased the principal assets of Wheelco Instruments Co., Chicago, maker of indicating, recording, and controlling instruments, and combustion safeguards. Present plans are to continue current operations in Chi-

cago until manufacturing facilities can be gradually transferred to Rockford. The merger will not affect Wheelco's national sales and service organization.

MONEY-MAKING



MIXERS



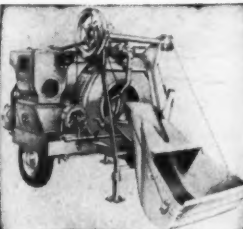
CMC 56-S TWO-YARDER

Specifically designed to facilitate increased Central Plant production on big jobs or in commercial plants. Advanced CMC engineering and features assure FASTER, SMOOTHER, and MORE EFFICIENT operation. Equipped with Timken Bearings throughout. Renewable hardened steel drum liners and hard alloy coated discharge buckets insure extra long life. Hydraulic finger-tip controlled charging and discharging.



CMC 11S, 16S FOUR WHEELERS

End or side discharge. Furnished in optional truck mountings. Compact construction for easy trailing and spotting on job. Timken roller bearing. Machined drum trucks. Improved stabilizers.



CMC 6-S TRAILER

HERE IS THE MOST VERSATILE MIXER ON WHEELS. Superior CMC design assures faster charging. This high-speed, non-tilt unit incorporates all the plus-value features that have made CMC mixers "tops in the field." Write today for latest illustrated catalog and prices.

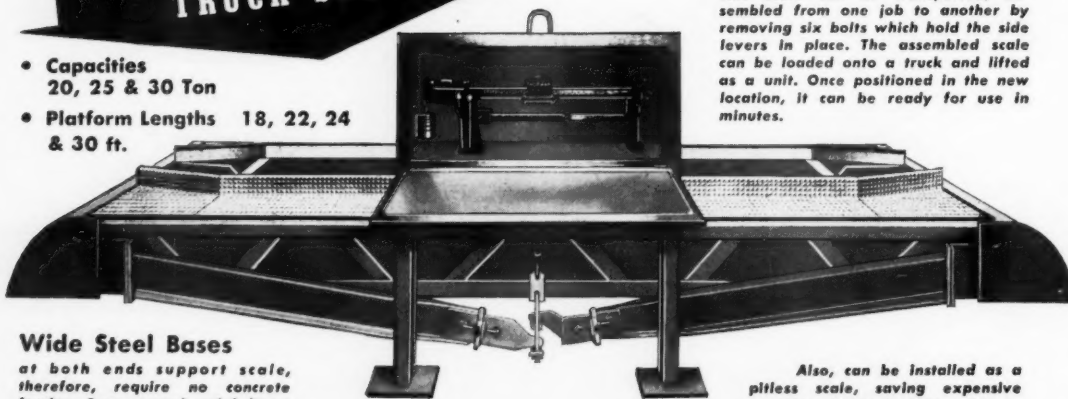
CONSTRUCTION
MACHINERY
COMPANIES



WATERLOO, IOWA

THURMAN PORTABLE TRUCK SCALE

- Capacities 20, 25 & 30 Ton
- Platform Lengths 18, 22, 24 & 30 ft.



Wide Steel Bases

at both ends support scale, therefore, require no concrete footing. Easy-to-read weigh-beam is chrome-plated. Other vital parts electro-plated against erosion.

The Thurman Line Includes:

- Pit Scales up to 50-Ton capacity
- Pitless Scales • Batching Scales • Liquid Weighing Scales • Wheelbarrow Scales • Warehouse Scales • This and other weighing equipment in sizes to fit your requirements

THIS SCALE CAN BE MOVED FROM JOB TO JOB, AS A UNIT

Accurate and Portable

This scale can be transported, assembled from one job to another by removing six bolts which hold the side levers in place. The assembled scale can be loaded onto a truck and lifted as a unit. Once positioned in the new location, it can be ready for use in minutes.

Also, can be installed as a pitless scale, saving expensive concrete pit-construction costs.

THURMAN MACHINE CO.

(Scale Division)

Established 1918
156 North Fifth Street Columbus 15, Ohio

Tar Hot-Mix Is Laid To Improve Old Pike

Wider Pavement Has 9 to 12-Inch Gravel Foundation Course
And 6-Inch Crushed Gravel Base Course; Four Pits Dug

• LAST season the Rhode Island Department of Public Works, Division of Roads and Bridges, improved a 4.8-mile stretch of State Route 101, Old Hartford Pike, from Route 116 in North Scituate westerly to the intersection of Route 102. Just east of the improvement U. S. 6 joins the Old Hartford Pike to become the main approach to Providence from the west. West of the improvement, Route 101 continues to the Connecticut line, part of the most direct highway between the two state capitals—Hartford and Providence.

Traffic had been heavy even on the old pavement, which averaged 18 feet in width and consisted of bituminous-surface-treated gravel built up into a mat 2 to 3 inches thick. The new design with a tar hot-mix surface is 24 feet wide, flanked by 8-foot treated shoulders. Besides being rough and narrow, the old pavement was crowned too high for present-day standards. Since the alignment was generally satisfactory, only two changes were made for relocation to reduce horizontal curvature.

Construction got under way in April, 1951, after the Department of Public Works awarded a contract for the reconstruction to the M. A. Gammino Construction Co. of Providence, R. I., on its low bid of \$524,557.64. The project was completed in October.

Grading

After the necessary clearing and grubbing was done, grading started in a ledge cut about 1½ miles from the east end of the job. Unclassified excavation for the job totaled 57,704 cubic yards, while the borrow material, needed to complete the fills, amounted to 52,717 yards according to the estimated quantities. Where fresh fill was placed over the old pavement, the latter was first scarified with the teeth of a motor grader to make a better bond. Over 27,000 square yards of old pavement was roughed up in this manner.

Dirt-moving was handled by two Northwest shovels, 2-yard and 1½-yard; two Caterpillar D7's and an International TD-14 tractor-dozers; and a fleet of eight trucks. Roadway hauls were short, but when the gravel foundation course got started the length of haul increased, and the number of trucks increased to fifteen. Grading was a routine operation, with the cuts and fills averaging from 6 to 8 feet in height.

As a foundation for the base course and pavement, gravel was then put down over the entire roadway to a width of 26 feet, or one foot wider than the pavement on each side. The depth averaged between 9 and 12 inches, but in a few locations where muck was removed from the subgrade, the gravel used in the backfill was 2 feet in depth. Approximately 33,000 yards of gravel

were required for this foundation layer, and the material was not easily obtained. A growing scarcity of gravel in this part of Rhode Island caused the contractor to dig in four different pits which were from 1½ to 6½ miles distant from the job site. The shovel-loaded trucks end-dumped the gravel on the roadway where it was spread by the dozers, shaped by a pair of Caterpillar motor graders, and compacted by Buffalo-Springfield 10-ton 3-wheel rollers.

(Continued on next page)



C. & E. M. Photo

As a truck dumps a mix of 180 to 200-degree-F temperature, an Adnan Black Top Paver lays the bituminous concrete in 12-foot lanes on Route 101 in Rhode Island.



If it's a "QUICK-WAY," it's a MONEY MAKER

The World's Leading Truck Shovel



"QUICK-WAY" Model J Dragline



"QUICK-WAY" Model S Shovel



"QUICK-WAY" Model E Trench Hoe

"QUICK-WAY", the original truck shovel and always the standard, has for 30 years demonstrated its versatility and adaptability, as well as its superb engineering and long lasting construction—not only in the United States but in 65 foreign countries as well.

"QUICK-WAYS" get to and from the job faster—up to 50 miles an hour on the highway. They're quickly convertible in minutes—an attachment for every job, with four booms, shovel, scoop, trench hoe and crane. As a drag-line, clamshell, pile driver, log grapple, magnet, silage or hay fork, "QUICK-WAY" is a fast moneymaker. Crane hook, concrete bucket and other special purpose tools are available.

In "QUICK-WAY" you get fine construction, all steel for strength and lightness, accurate balance. High capacity to weight ratio. Quality construction means longer life—more profits on a small investment. Economical to buy. Write today.

You can mount basic unit on your own truck or purchase complete with your choice of trucks.

Model L 10 Ton Crane, ½ Yd. Shovel, 7½ to 10 Ton Truck

Model E 7½ Ton Crane, 4/10 Yd. Shovel, 5 to 7½ Ton Truck

Model S 5 Ton Crane, ½ Yd. Shovel, 2 to 3½ Ton Truck

Model J 3 Ton Crane, ¼ Yd. Shovel, 1½ to 2½ Ton Truck

Vulcan Tools

Rock Drills, Pavement Breakers and
Clay Diggers

Vulcan Tool Manufacturing Co.

35-42 Liberty Street, Quincy 69, Mass.

Branch Offices and Warehouse Stock.

74 Murray St. 34 No. Clinton St.

New York 7, N. Y. Chicago 6, Ill.

Send for catalog or see your local distributor.

Mail Coupon Today!

"QUICK-WAY" TRUCK SHOVEL CO.
Dept. 62 • 2401 East 40th Ave.
Denver, Colorado • U.S.A.

Please send me complete details on "QUICK-WAY" truck shovels—four different models for large jobs and small.

Name _____

Address _____

City _____

State _____

Tar Hot-Mix Is Laid To Improve Old Pike

(Continued from preceding page)

Gravel Base Course

Next a crushed-gravel base course was laid 6 inches in depth and to a width of 24 feet. The crushed gravel, with 100 per cent passing the 3-inch screen, came from the contractor's commercial sand and gravel plant at Cranston, a 12-mile haul to the job. It was end-dumped, with the tail gates of the trucks locked at a fixed opening so as to distribute the material evenly in a single course. As much as possible the base course was put down full width at a time. Paralleling town roads provided convenient detours for through traffic, while local traffic was maintained over the construction.

Motor graders shaped the base course which was then compacted by the 10-ton 3-wheel rollers. During the rolling operations, a Buckeye spreader laid a thin layer of sand over the gravel base. Brooms at the back of the rollers swept the sand into the interstices of the material, which resulted in a tightly knit sand-filled gravel base course.

The base was then primed, half width at a time, with RT-2 tar applied at the rate of 0.5 gallon to the square yard at a temperature between 125 and 130 degrees F. Bitumen was both supplied and applied by the Tar Products Division of Koppers Co., Inc., with a plant in East Providence. The prime was applied in two 12-foot strips to cover the area beneath the pavement. A light coat of sand was spread on by hand from trucks so that the bitumen would not pick up under local traffic. Priming was done 5 to 10 days in advance of paving.

Bituminous-Concrete Pavement

Over the base course went Class I-3 bituminous concrete—a tar hot-mix, Tarmac RT-12, laid in two courses. The lower or binder course was 1½ inches thick after compaction, while the top or surface course was 1¼ inches following the rolling. The binder was a mix of sand, gravel, and RT-12 tar, while the surface course consisted of sand, crushed stone, and RT-12 tar. Crushed stone was specified for the top course in order to increase the wearing qualities of the pavement.

M. A. Gammino Construction Co. mixed the materials in its commercial 2½-ton Simplicity pugmill plant on Ernest Street in Providence, a 20-mile haul to the project. All aggregate came from the contractor's own plants—gravel from Cranston, crushed stone from the Lincoln Trap Rock Quarry at Lincoln, and sand from the Phoenix Avenue plant in Providence. Enough fines were blended into the sand so that no lime dust was required. Koppers tar was used for the bitumen.

The Materials Laboratory of the Department of Public Works set up the following job formulas:

Material	Per Cent
Binder Course	
1¼-½-inch gravel	23.60
½-¼-inch gravel	35.25
¾-No. 10 gravel	17.55
Sand	19.00
RT-12 tar	4.60
Total	100.00
Top Course	
½-¾-inch crushed stone	10.00
¾-No. 10 crushed stone	39.75
Sand	43.35
RT-2 tar	6.90
Total	100.00

Laying the Hot-Mix

From the plant a fleet of 12 trucks, chiefly company-owned with a few hired, hauled the hot-mix to the job. The trucks carried 10 tons of material—four 2½-ton batches—which was covered with tarpaulins to retain the heat. As it was laid the temperature of the mix was around 180 to 200 degrees F. An Adnun Black Top Paver laid the



C. & E. M. Photo

The paver is followed by a Buffalo-Springfield 10-ton tandem roller, which compacts the hot-mix.

bituminous concrete in 12-foot lanes which were compacted by a Buffalo-Springfield 10-ton tandem roller. The

next day any remaining irregularities in the course were removed with additional rolling, this time by the 10-ton

3-wheel roller. The 3-wheeler was not used the first day, to prevent the pos-
(Concluded on next page)

tough jobs -



demand AMERICAN BOSCH

All over the world, more and more Diesel engines with American Bosch fuel injection equipment are delivering efficient, dependable, economical performance—in trucks and tractors, in locomotives, workboats and stationary power installations.

And world-wide American Bosch service keeps pace. In North America alone, 115 authorized American Bosch stations now serve Diesel users, with new facilities being constantly added to meet new needs.

At these stations, factory-trained mechanics apply the

latest and most efficient service methods...work with test equipment and specialized service tools that are designed and built to high factory standards for prompt, accurate, reliable servicing.

Complete precision service like this saves time and money for owners of American Bosch-equipped Diesels...helps keep their engines working at top efficiency. It's another reason why dependable fuel injection equipment by American Bosch *stays dependable*—everywhere—throughout a long and economical life. American Bosch Corporation, Springfield 7, Massachusetts.

SERVICE STATIONS IN THE UNITED STATES

ALABAMA
Birmingham 3, Birmingham Electric
Battery Co., Ave. B & 23rd St. S.

ARIZONA
Mesa, Perkins Diesel Service, 747
South Mesa Blvd.
N. Little Rock, Womack Bros. & Tay-
lor, 522 E. Washington.
Phoenix, Charlie C. Jones Battery &
Electric Co., 318-322 W. Jefferson
St.
Yuma, Yuma Automotive Electric Co.,
229 Eighth Street

CALIFORNIA
Callexico, Callexico Pump & Magneto
Co., 115 East Third St.
Eureka, Industrial Diesel & Electric,
5th & Commercial Sts.
Fresno, Winther Bros., 612 Divisadero
St.
Los Angeles, Diesel Injection Equip-
ment Co., 4847 Anaheim Tele-
graph Rd.
Los Angeles 21, Magneto Sales &
Service Co., Inc., 751 Towne
Ave.
Sacramento 6, Langner & Rifkin,
1116-22 15th St.
Salinas, Haag Diesel Electric, 37
Abbott St.

San Diego, Magneto Sales & Service
Co., 1254 Kettner Boulevard
San Francisco 3, Furrer & Uster, 225
Seventh St.
Wilmington, Diesel Control Corp.,
218 N. Marine Ave.

COLORADO
Denver 3, Central Supply Company,
1171 Lincoln St.

CONNECTICUT
Hartford, W. J. Connell Co. of Hart-
ford, 85 Airport Road

DISTRICT OF COLUMBIA
Washington, Diesel & Ignition Service
Inc., 925 Girard St., N.E.

FLORIDA
Jacksonville, Patten Sales Co., Inc.,
1021 Hogan St.
Jacksonville 1, Spencer Electric, Inc.,
40 W. Beaver St.
Miami 36, Florida Diesel Service Co.,
1930 N. Miami Ave.
Tampa, Stuart Diesel Service, 3101
4th Ave.

GEORGIA
Atlanta 3, Auto Electric & Magneto
Co., 477 Spring St. N.W.

IDAHO
Boise, Magneto & Diesel Supply Co.,
2406 Main St.

Lewiston, Osterman Diesel & Electric
Co., 1610 Main St.

ILLINOIS
Chicago 16, Illinois Auto Electric
Co., 2011-37 So. Indiana Ave.
Peoria, Automotive Ignition Co., 522
Franklin St.

INDIANA
Rock Island, Lohse Automotive Ser-
vice, 430 17th St.

INDIANA
Indianapolis 4, Gulling Auto Electric
Inc., 450 N. Capitol Ave.

IOWA
Cedar Rapids, Edwards Carburetor &
Electric Co., 209 Seventh St.
S.E.

KANSAS
Des Moines, Electrical Service & Sales
Co., 1313 Walnut St.

KANSAS
Wichita 2, E. S. Cowie Electric Co.,
230 S. Topeka Ave.

KENTUCKY
Louisville, Schoaf Auto Electric Co.,
Broadway at Jackson

LOUISIANA
New Orleans, Gershoff's Fuel In-
jection Service, 734 Girod St.
New Orleans 13, John M. Walton,
Inc., 1050 Carondelet St.

Shreveport, Vaughan Tractor & Auto
Parts Co., 224 Airport Drive

MAINE
Portland 5, Portland Tractor Co., Inc.,
803 Forest Ave.

MARYLAND
Baltimore 1, Parks and Hull Auto-
motive Corp., 1033 Cathedral St.
Baltimore, Stephen Selth & Co., 878
Park Ave.

MASSACHUSETTS
Boston 15, W. J. Connell Company,
121 Brookline Ave.

MASSACHUSETTS
Boston 10, Wharf Machine & Electric
Co., Inc., Fish Pier Road

MICHIGAN
Fairhaven, Hathaway Machinery Co.,
Inc., Hathaway-Braleigh Wharf

MICHIGAN
Detroit, Knorr-Maynard, Inc., 5743
N. Woodward Ave.

MINNESOTA
Minneapolis, Diesel Service Co., 2509
E. Lake St.

MINNESOTA
Minneapolis 2, Reinhard Bros. Co.,
Inc., 11 South 9th St.

MISSISSIPPI
Jackson, Womack Brothers, 1305 South
Gallatin St.

sibility of ruts developing.

In general, the paving progressed from the east to the west end of the job, first the binder and then the top course. The usual procedure was to have the Adnun put down a 12-foot lane, or half the width in the morning, and then lay the adjoining lane in the afternoon. Thus at the end of each day the full width was squared off and completed for that section.

An average of 500 tons of hot-mix was laid in a 12-hour day with the single machine. Maximum production was reached when 779½ tons of material were put down as binder on September 19. This tonnage accounted for 3,600 linear feet of binder course, 24 feet in width.

When the paving was completed, the 8-foot gravel shoulders were treated with a shot of RT-2 tar applied at the rate of 0.75 gallon to the square yard. After a 10-day lapse the shoulders were sealed with MC-3 asphalt, 0.25 gallon to the square yard, and covered with a light coat of sand.



C. & E. M. Photo

Frank Gammino (right), of the M. A. Gammino Construction Co., with Paving Foreman Salvatore DeCataldo.

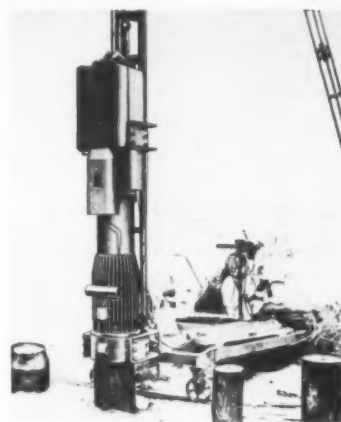
Quantities and Personnel

Major items in the 4.8-mile road contract included the following:

Clearing and grubbing	19 acres
Unclassified excavation	57,704 cu. yds.
Borrow-fill	52,712 cu. yds.
Gravel foundation	33,000 cu. yds.
Crushed-gravel base course	19,000 tons
Sand filler	4,700 cu. yds.
Bituminous concrete	69,200 sq. yds.
RT-2 prime coat	26,300 gals.
Bitumen for shoulders	46,200 gals.

Including truck drivers, the M. A. Gammino Construction Co. employed an average force of 65 on the project under the direction of Superintendents John Delehanty and John Giordano; Salvatore DeCataldo was Paving Foreman.

For the Rhode Island Department of Public Works, Division of Roads and Bridges, Al W. Durfee was Resident Engineer, assisted by Arthur Gingerella and P. A. Gentile, Inspectors. The Department is headed by Philip S. Mancini, Director. George H. Henderson is Principal Highway Engineer, and Lee V. Spencer is Road Construction Engineer.



The Syntrol Model 3000 diesel pile hammer driving wooden piles.

Diesel Pile Hammer

A new-model self-contained diesel pile hammer is announced by Syntrol Co., 227 Lexington Ave., Homer City, Pa. The No. 3000 DPH operates at 110 blows per minute and its 1,200-pound ram delivers 3,000 foot-pounds per stroke. It is 9 feet long, 18 inches wide, weighs 3,000 pounds, and fits in 18½-inch leads.

The force of each blow, from non-impact idling to full power, is remotely controlled by the operator through a hydraulic system. The hammer can be handled by a gasoline or diesel-engine-driven crane or furnished complete with rig, leads, and hoisting engine, to drive sheet steel, timber, or concrete piling.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 902.

Bulletins on Truck Models

Bulletins on two heavy-duty truck models are available from Four Wheel Drive Auto Co., Clintonville, Wis. They cover the SU and HAY units which feature full-floating axle, large safety cab, five-speed transmission, and optional power takeoff and two-speed auxiliary transmission.

The 6-cylinder HAY has a GVW of 28,000 pounds, develops 126 brake hp, and has a 150-inch wheelbase. The smaller SU with a 144-inch wheelbase has a GVW of 22,000 pounds and develops 125 hp.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 911.

Line of Surveying Equipment

A 42-page bulletin on the complete White line of surveying equipment is available from David White Co., 315 W. Court St., Milwaukee 12, Wis. It illustrates and gives specifications on transits, levels, combination instruments, alidades, tapes, and general surveying accessories.

It shows a complete cross section of a transit and lists all parts. It also includes a section on the advantages of coated lenses.

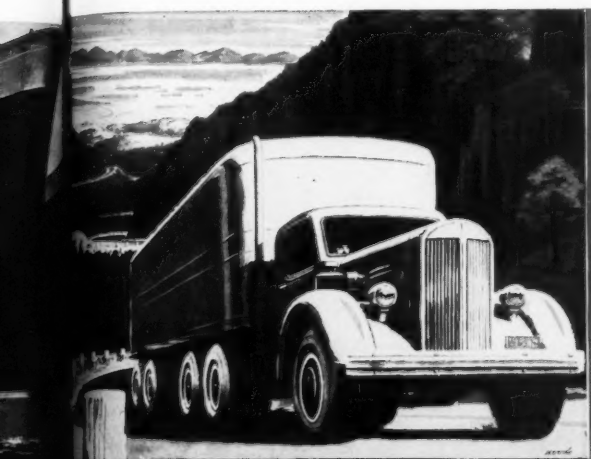
This literature may be obtained from the company by requesting Bulletin No. 1052, or by using the Request Card at page 16. Circle No. 909.

Huber Promotes Gillette

F. W. Gillette is District Manager in six eastern states for Huber Mfg. Co., Marion, Ohio, manufacturer of road machinery. Mr. Gillette's territory includes the states of Virginia, Maryland, Delaware, New Jersey, eastern Pennsylvania, and the District of Columbia, and he makes his headquarters in Washington, D. C.

Don McPherson, Huber District Manager, continues to cover six northern states in the Eastern District: New York, Massachusetts, Maine, New Hampshire, Connecticut, and Vermont.

EVERYWHERE



performance and service

MISSOURI

Kansas City 8, Electrical & Magneto Service Co., 2538 Grand Ave.
St. Louis 23, Diesel Fuel Injection Service Co., 9331 So. Broadway
St. Louis 3, Electric Parts and Service Co., 2900 Washington Blvd.

MONTANA

Billings, Original Equipment, Inc., 423 North Broadway

NEBRASKA

Omaha 2, Carl A. Anderson, Inc., 16th & Jones

NEW JERSEY

Newark 2, Tire Trading Company, Inc., 239 Halsey St.

NEW MEXICO

Albuquerque, Hill Auto Electric Service, 415 W. Marquette Ave.

NEW YORK

Brooklyn 9, E. A. Wildermuth, Inc., 1102 Atlantic Ave.
Bellevue, Bellver Magneto Co., 60 Wallville St.
Buffalo 8, Helrich Electric Service, 1032 Ellicott St.
New York 19, American Bosch Corp., New York Service Sales Division, 601 W. 51st St.
Pelham Manor, Corretti-Gross, Inc., 44 Secor Lane
Syracuse 4, F. A. Crossman, Inc., 943 West Genesee St.
Troy, Ehrlich Electric Service, Inc., 200 Fourth St.

Utica, Stiefvater Electric Co., Inc., 320-322 Lafayette St.

NORTH CAROLINA

Charlotte, Corning Rim & Wheel Co., 301 East 8th St.

NORTH DAKOTA

Fargo, Northwestern Diesel Equipment Service, 2800 Front St.

OHIO

Cincinnati, Tri-State Distributing Corp., Broadway at Eighth
Cleveland 14, The Cleveland Ignition Co., 1301 Superior Ave.
Columbus 15, Columbus Ignition Co., 211 Neilston St.
Lisbon, Diesel Service Co., 234 East Washington St.

OKLAHOMA

Fairview, Keck Bros. Diesel Service, 322 S. Main St.
Oklahoma City 2, American Electric Ignition Co., 124 N.W. 8th St.
Tulsa, Magneto Ignition Company, 701 West 5th St.

OREGON

Klamath Falls, Diesel & Electric Service, 1950 So. Sixth St.
Pendleton, Eds Magneto & Diesel Co., S.W. 18th & Court St.
Portland 14, Automotive Products, Inc., 1700 Southeast Grand Ave.
Roseburg, Diesel Products Co., 303 E. 2nd Ave. S.

PENNSYLVANIA

Hazleton, Penn Diesel Service Co., 27th & N. Church Sts.

Philadelphia, Sullivan Brothers, 1718 Fairmount Ave.
Pittsburgh 13, Automotive Ignition Co., Inc., 6358-6364 Penn. Ave.

SOUTH CAROLINA

Charleston, Diesel Fuel Injection Service, No. 2 Exchange St.

TENNESSEE

Knoxville, Diesel-Magneto Service Co., 1209 Island Home Ave.
Memphis 4, Automotive Elec. Service Co., 982 Linden Ave.

TEXAS

Amarillo, Rodcliff Brothers Electric Co., 214 Buchanan St.
Dallas 1, Beard & Stone Electric Co., Inc., 3909 Live Oak St.
El Paso, Oakes Battery & Electric Co., 423 Texas St.
Houston 1, Beard & Stone Electric Co., Inc., 805 Paik Ave., P. O. Box 1717
Odessa, Electric Service & Supply, P. O. Box 1471
San Antonio, S. X. Colahan, 425 N. Flores St.
San Antonio, Womack Bros., 1018 S. Presa St.

UTAH

Salt Lake City, Diesel Electric Service & Supply Co., 58 East 7th South

VIRGINIA

Norfolk, Diesel Injection Sales and Service, 808 Union St.
Richmond, C. H. Woodward Electric Co., Inc., 709 W. Broad St.

WASHINGTON

Davenport, Wagner Diesel & Electric, P. O. Box 165
Seattle, Seattle Injector Co., 2706 Second Ave.

Seattle, Sunsel Electric Co., 300 Westlake North, P. O. Box 3148
Spokane, Sunsel Electric Co., North 703 Division St.
Walla Walla, Industrial Products Co., 610 N. Ninth St.

WISCONSIN

Milwaukee 2, Wisconsin Magneto Company, 918 N. Broadway

ALASKA

Anchorage, Automotive Diesel Electric Supply & Overhaul, P. O. Box 1160
Anchorage, Bjornstad & Clark, Inc., 445 East 4th St., P. O. Box 1497
Fairbanks, Glenn Carrington & Co., North Turner St.

Juneau, Parsons Electric Company, Second & Seward Sts., P. O. Box 2201

HAWAIIAN ISLANDS

Honolulu, Honolulu Iron Works Co., P. O. Box 3140
Honolulu, Tadoki Machine & Marine Works, 810 Halekauwila St.

PUERTO RICO

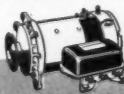
San Juan, General Farm Equipment Co., Trasmiramar, Santurce, P. O. Box 3588

Complete list of Foreign service stations available on request

AMERICAN BOSCH



Automotive and Aviation Magneto



Generators and Regulators



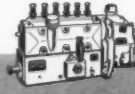
Components for Aircraft Engines



All Electric Windshield Wipers



Ignition Coils



Diesel Fuel Injection Equipment



Carbide-tipped drill bits for cutting $\frac{3}{4}$ to 5-inch holes in hard masonry are announced by New England Carbide Tool Co., 60 Brookline St., Cambridge 39, Mass. Information on the Thunder-Core may be secured from the company. Or use the Request Card at page 16. Circle No. 884.

Scrap Recovery Good But It Must Continue

The American Association of State Highway Officials gives credit where credit is due in the report its Scrap Recovery Subcommittee put out at the end of February; highway departments, contractors, and equipment dealers of 37 states receive praise for their efforts. The subcommittee (to whose Highway Scrap Metal Recovery Drive we referred in the March issue of C & E Monthly, pg. 4) announces that during January its monthly ferrous-scrap recovery was increased to 23,282 tons. Of this amount 18,550 tons was through direct efforts and 4,732 attributable to indirect efforts. Some 325 tons of non-ferrous scrap was also reported recovered during this period. For direct ferrous recovery, New York was first with 5,485 tons; Pennsylvania second with 2,850 tons; Florida third with 1,102 tons; and Georgia fourth with 1,013 tons.

This is good, but the work must go on. The AASHO subcommittee particularly urges participants to be on the lookout for dormant scrap visible from the highway, and to report it. In one respect, however—that of obsolete autos—the situation has changed since the scrap drive began. Auto wreckers are now under NPA jurisdiction, the NPA has information on the principal auto graveyards, and this source of scrap is now moving smoothly into consuming channels; so, unless specially requested, there is no need to continue reporting on auto scrap. On the other hand, NPA field offices will welcome all the information they can get on abandoned quarrying and mining machinery, abandoned oil derricks, discarded farming equipment, etc.

Equipment dealers are important in the direct-recovery side of scrap salvage. As an instance of this, the subcommittee's report mentions a dealer who called at the Washington office of the Bureau of Public Roads on another matter. The conversation turned on steel scrap, and the dealer said he had helped out in the scrap drive by furnishing trucks to haul collections. His firm is shipping about two carloads of scrap a month and he offered to furnish a monthly report to his State highway department on the shipments. Equipment dealers often make the final disposition of worn-out and obsolete highway equipment. Another point brought out in the subcommittee's report is that applicants who request priority assistance in the purchase of new equipment are often in a position to help out in the scrap drive.

Highlights on individual state activities reveal: a combination of various state and county departments and associations can bring excellent results both in recovery and reporting; a re-

quest to various bodies for monthly scrap-recovery reports is helpful; abandoned streetcar rails and bridges make a fruitful source of supply; in one state, highway police report on scrap found on their beats; in another all state district engineers assign a man to locate highway scrap metal; maintenance schools are becoming scrap-conscious; a dealer in one state salvaged an oil derrick for scrap.

These are just some results. The AASHO subcommittee, is offering congratulations to 37 states, hopes the remainder will organize schemes and participate too in the Highway Scrap Metal Recovery Drive. At least 38,000,000 tons of scrap will be needed for 1952 steel production. What about it?

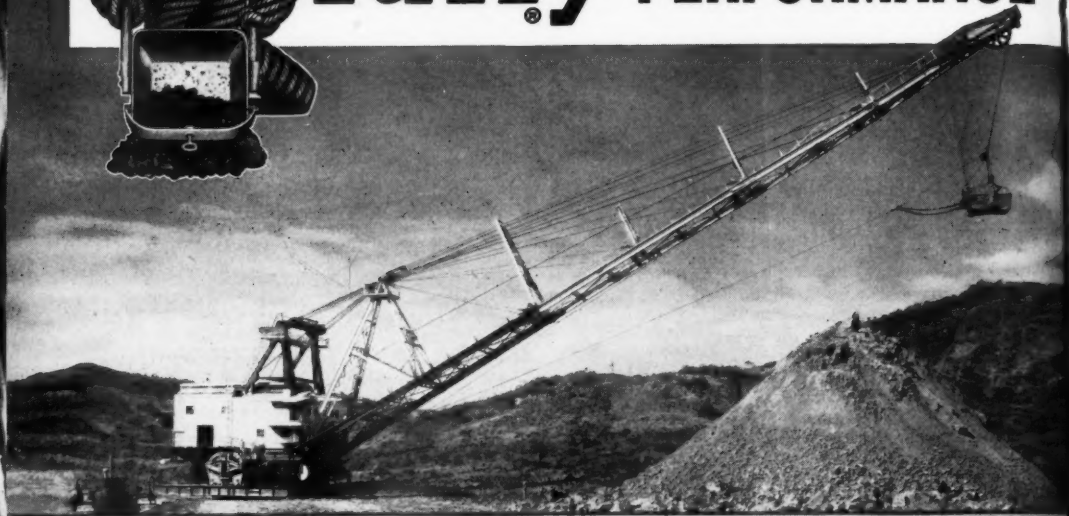
Universal Concrete Handles Flexicore Slabs in Florida

Universal Concrete Pipe Co., Columbus, Ohio, has become a licensee of The Flexicore Co., Dayton, Ohio, to handle manufacture and sales of Flexicore prestressed-concrete slabs in Florida. The slabs will be produced at the firm's Hooker's Point plant near Tampa, and Robert H. Gates will have charge of Florida Flexicore sales.

Production of the Flexicore long-span slabs is already under way at Hooker's Point. The slabs are used for modern roofing and flooring, their hollow cores being well suited for plumbing and wiring installations, the company says.



Day After Day After Day... Tuffy PERFORMANCE



The Correct Measure of a Wire Rope . . . Is not the length or the initial cost per foot but the yards of materials it will move and the number of days it will stay in service without breaking. By those measures TUFFY draglines and TUFFY scraper ropes will give you the lowest ultimate cost of any wire rope you've ever used.

Here is Why...

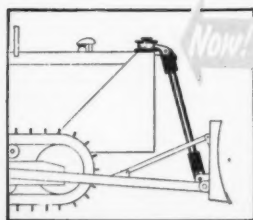
EXTRA FLEXIBILITY — Without sacrificing other qualities, Tuffy draglines and scraper ropes are built of the finest steel and designed for the special purposes — to take sharper bends, angle pulls and rapid line speed.

EXTRA ABRASIVE RESISTANCE — Super tough construction of TUFFY special purpose ropes gives them maximum resistance to

drum crushing abuse, crawling on guide roll flanges, etc.

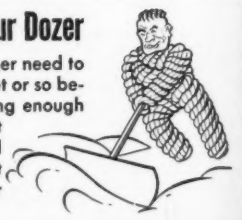
EXTRA TOUGHNESS — Union-formed (pre-formed) TUFFY construction resists heavy line pull, multiplied shock of load on slack line, the stresses of all types of material.

EASY TO HANDLE — Because TUFFY special purpose ropes are more pliable—spool better, ride better on grooves, hug drums when casting on draglines.



Mount a Reel of Tuffy DOZER ROPE on Your Dozer

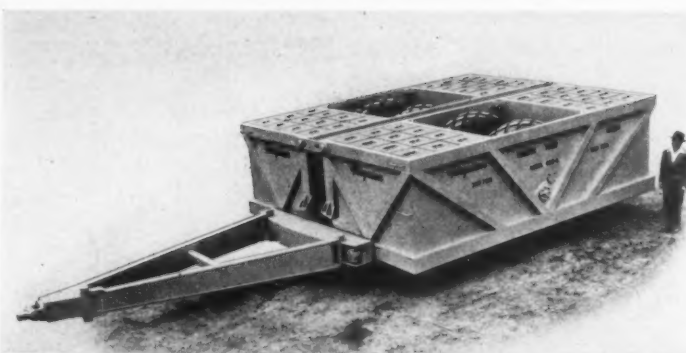
Stop Wasting 75% of Your Dozer Rope. You no longer need to throw away 40 to 50 feet of dozer rope just because 10 feet or so becomes crushed or cut on the drum. Stop it simply by feeding enough new rope through the wedge socket to replace only the part that is damaged. Tuffy $\frac{1}{2}$ -inch Dozer Rope is now furnished in 150 ft. reels. Write for simple details on how to mount it on your dozers just back of the wedge socket. Save dozer rope footage and dollars.



New 200-Ton Roller

A 200-ton rubber-tire roller for use on fills of runways where heavy planes are to operate is announced by Shovel Supply Co., 4900 Hines Blvd., Dallas 1, Texas. It is built in two halves, each half having two tires and oscillating independently, thus following the undulation of the fill.

The unit rolls on 4 (30 x 33, 60-ply, 150-psi) Goodyear tires, each designed to carry a load of 100,000 pounds. Specially built wheels are equipped with tapered roller bearings and grease seals. Wheel assemblies may be removed through the top of the roller frame for tire repairs. The rear of the roller has an extra tongue so that propelling trac-



Empty, this rubber-tire compactor weighs 77,000 pounds; ballasted it weighs 400,000. Shovel Supply Co. designed it specially for runways taking heavy planes.

tors may be used both front and rear if necessary.

At the rear of the roller is a 15-hp 4-cylinder gasoline engine driving a hydraulic pump which supplies 5,000 psi for a 10-inch hydraulic cylinder. A piston is provided with various-size pads or feet to test the bearing capacity of fill. Also furnished is a special bridge with a fulcrum arrangement acting directly on a special micrometer indicator gage which records vertical displacement.

Empty, the roller weighs 77,000 pounds. Cast-iron ballast blocks weighing 2,500 pounds each, equipped with lifting loops, and made to fit ballast compartments closely, give a ballast weight of 323,000 pounds and a total weight of 400,000 pounds.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 856.

Heavy-Duty Engines

Three new heavy-duty industrial engines are being produced by Ford Motor Co., 3000 Schaefer Road, Dearborn, Mich. Equipped with overhead valves, the Ford 317 and 279 are V-8's with horsepowers of 140 and 125. The 6-cylinder 215 has a 93 rated hp.

These high-compression short-stroke engines are said to deliver more horsepower per cubic inch of displacement and improve fuel economy. Cylinders are cast of high-grade iron and the valves are high-chrome nickel alloy.

All engines have heavy-duty replaceable thin-shell copper-leaded bearings. The oil system has a full-flow filter with a renewable element that cleans engine oil and reduces ring wear. The full-length water jackets which surround each cylinder are said to simplify cooling and provide better temperature control.

All six Ford industrial engines are available either as engine assemblies or as complete power units. Also available is a new torque converter designed to absorb shock overloads, prevent stalling under excess loads, and start bigger loads faster.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 881.

Catalog on Chain Saws

An informative 70-page catalog, covering over 26 models of chain saws, is offered by Mall Tool Co., 7740 S. Chicago Ave., Chicago 19, Ill. It includes specifications and descriptions of the complete Mall line of one and two-man-operated gasoline-engine chain saws; electric chain saws for operation off standard and high-cycle currents or portable generators; pneumatic chain saws for timber cutting and trimming, etc.; and cutting attachments and maintenance equipment for chain saws.

A preliminary section of the catalog is devoted to detailed and useful information on choosing, operating, and caring for chain saws. Then come the sections devoted to specific kinds and models of chain saws, with plenty of on-the-job illustrations, tables, and diagrams. The catalog also tabulates the contents of chain saws in board feet according to the Doyle, International, and Scribner Decimal C log rules.

This literature may be obtained from the company by requesting Catalog No. 30, or by using the Request Card at page 16. Circle No. 998.

Acrow Appoints Rasmussen

Robert C. Rasmussen is newly appointed Sales Manager for the Chicago Division of Acrow, Inc., Chicago, Ill., manufacturer of shores. Mr. Rasmussen's territory covers Illinois, Michigan (except Detroit), Indiana, Wisconsin, Missouri, Iowa, Minnesota, Kansas, Nebraska, North Dakota, and South Dakota.

... Yard After Yard After Yard ... REDUCES MATERIAL HANDLING COST



The Easy Way to Order TUFFY Special Purpose

Ropes is to forget all about complicated wire rope specifications—all you need to do is to specify the diameter and the length and the name TUFFY Scraper, TUFFY Dragline or TUFFY Sling. Union Wire Rope engineers have developed wire rope constructions and wire fabric constructions to serve universally in specific fields of operation. All you need is—Length, Diameter and the name TUFFY!



Tuffy SLINGS



SUPER-FLEXIBLE, Super-TOUGH—Tie Tuffy Slings into knots, kink them, flatten the eyes—and see how many more times you can straighten them without material damage, how cutting any one of the 9 parts of the interlaced wire fabric will not strand the sling. With every type of hitch, under any kind of load or pull, TUFFY Slings have proven their superiority. Each Tuffy sling is proof-tested to twice its safe working load. The interlaced construction makes possible eye splices with 95% of the fabric strength.

Tuffy Slings are available in 10 factory packaged types. Easy to order.

UNION WIRE ROPE CORPORATION

2260 Manchester Ave.

Kansas City, Mo.

Please send information on TUFFY Slings . . . Draglines . . .
Scraper Rope . . . Dozer Rope . . . Union-formed Wire Rope.

Firm Name _____

Address _____

City _____ Zone _____ State _____



union
Wire Rope
corporation
Specialists in Wire Rope

Reservoir Cleared For Bull Shoals Dam

Eight crews have been clearing the reservoir site for Bull Shoals Dam, north of Little Rock, Ark. Schultz Construction Co. and Winters Construction Co. are the two prime contractors, and subcontractors provide some of the crews.

One crew employs 150 men and six International tractors—three TD-18A's, a TD-18, a TD-14A, and a TD-9. The tractors each clear an average of 10 acres a day, and sometimes twice as much as this on level land. On steep mountainsides where the tractors can scarcely climb, the acreage cleared per day is proportionately less. All big trees are cut down by 15 power-saw crews of three men each. These are followed by the tractors with Bucyrus-Erie and Isaacson dozers which push down the smaller trees—a job which sometimes involves the tractors in backward or sideways trips up the mountainsides as well as in more conventional forward



An International TD-14A with Bucyrus-Erie dozer pushes down a small group of trees on the clearing job at Bull Shoals Lake.



in WIRE ROPE, too load strain calls for **SPECIALIZED muscles**

Everything looks upside down to the three-toed sloth. Unique among animals, he prefers to live his life dangling downward from the top branches of tall trees. Helping him to survive in his topsy-turvy world are highly specialized and powerfully developed rear and forelimb muscles.

In wire rope, too, specialized jobs call for the right kind of muscle. Load strain! Bending fatigue! Shock stress! Abrasion! Each calls for wire rope that best combines the required resistance characteristics.

Complete quality control from ore to finished rope; long experience and specialized know-how—these are your assurance that in Wickwire Rope you always get the proper combination of physical properties for long-lasting, reliable service on your particular job.

For additional information write or phone our nearest sales office.



LOOK FOR
THE YELLOW TRIANGLE
ON THE REEL

THE COLORADO FUEL & IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

WICKWIRE ROPE



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

movement. All trees, roots, and brush are then piled up for burning. Hand-labor crews complete the final stage, assisted by a TD-9 with winch.

Bull Shoals Dam—a \$78,000,000 hydroelectric and flood-control project—is one of eight proposed for the White River Basin and is being built by Ozark Dam Contractors, an organization composed of several contracting firms. The reservoir will have a 5,400,000-acre-foot capacity.

AGC Safety Awards Increase

The Associated General Contractors of America, Inc., noted an encouraging rise in safety consciousness when it made its annual awards for on-the-job safety records at its 33rd Annual Convention last February. The number of awards for 1951 totaled 120 as against 88 in 1950.

H. B. Alexander, Harrisburg, Pa., Chairman of the Accident Prevention Committee, said that 25 per cent more construction firms reported their safety records in 1951 than in the previous year, and he believed that even more would push for good safety records as they realized the tremendous losses an accident can cause both the worker and the employer. Harry J. Kirk, Washington, D. C., the Association's Accident Prevention Director, remarked that the construction industry—once branded as one of the most dangerous—has been making encouraging strides in the last few years. The severity rate in 1951 dropped substantially in those firms participating in the AGC program—from 78 days lost per lost-time accident in 1950 to 65 days in 1951, a 13-day reduction.

The following six chapters of the AGC had the highest percentage of their members reporting participation in the accident-prevention program: Milwaukee Chapter; Dallas Chapter; Ohio Highway Chapter; Pennsylvania Builders Chapter; Michigan Road Builders' Association; and Detroit Chapter.

The best 10-year records in safety were awarded as follows: In the Building Division—H. B. Alexander & Son, Inc., Harrisburg, Pa.; Martin L. Bauer Construction Co., Middletown, Ohio; and Woermann Construction Co., St. Louis, Mo. In the Heavy Construction Division—Maxon Construction Co., Inc., Dayton, Ohio; The Holmes Construction Co., Inc., Wooster, Ohio; and Dravo Corp., Pittsburgh, Pa.

Thirteen AGC firms were honored for having the best five-year records, and 78 firms were cited as having posted no lost-time-accident reports.

Blaw-Knox Promotes Levison

Arthur A. Levison is Vice President and General Sales Manager of the Pittsburgh Blaw-Knox Division of Blaw-Knox Co., Blawnox, Pa., manufacturer of road and other construction machinery. Mr. Levison was, until his new appointment, Division Vice President in Charge of the Construction Equipment Department.

Another appointment in the Division is that of H. Russell Loxterman, who is Assistant General Sales Manager. He will also continue as Manager of the Steel Plant Equipment Department.

SELF-PRIMING CENTRIFUGAL PUMPS

RICE

Engine, belt, and electric driven pumps with many new features to give you outstanding performance at low cost. A.G.C. rated. Write for special bulletins.



**RICE PUMP
& MACHINE COMPANY**
220 N. Milwaukee St.

Grafton, Wis.

Prestressed-Concrete Proceedings Available

Complete proceedings of the First U. S. Conference on Prestressed Concrete, held at M. I. T., August 14-16, 1951, are now available. All the papers are published in their entirety, with accompanying photos, drawings, and charts, in the 256-page booklet. They cover all phases of prestressed-concrete work: design, testing, fabrication, production control, materials, field placement, labor, patents, codes, and research. They also give detailed descriptions of bridge, building, pipe, tank, pile, and pavement construction. Since the booklet chronicles the development of a material that may well

be the most significant advance in engineering in a century, it deserves a place in everyone's engineering reference library.

Its cost is \$1.50 plus postage (12 cents in continental United States, 21 cents elsewhere). Copies may be obtained by addressing Prestressed Concrete Conference, Room 1-163, Massachusetts Institute of Technology, Cambridge 39, Mass.

Folder on Sod Cutter

A folder on a gasoline-powered sod cutter is available from K & N Machine Works, Inc., 871 Edgerton St., St. Paul 1, Minn. The one-man-operated Ryan has a high-speed blade which is said

to make a uniform clean cut.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 886.

Booklet on Line of Levels

A booklet on a line of standard and precise levels is available from Henry Wild Surveying Instruments Supply Co. of America, Inc., 26 Court St., Brooklyn, N. Y. It covers the Model NI small level and the precise models NII and NIII.

The small NI is suitable for rough work on above and below-grade construction work. It has a magnification of 18, a 6-inch telescope, and weighs

only 3.3 pounds.

The precise NII and NIII have magnifications of 28 and 42 and an accuracy in one mile of about 0.12 inch and 0.01 inch. Invar staffs are used with the precision instruments.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 886.

Manages Thor Sales, Chicago

Arthur H. Nelson has taken over the post of Manager of Electric Tool Sales in the Chicago branch of Independent Pneumatic Tool Co., Aurora, Ill., manufacturer of Thor portable power tools. For the past few years he has been a Thor service engineer.

There is a GM Diesel Engine Distributor Near You

ALABAMA—Birmingham
ARMSTRONG EQUIPMENT CO.
Montgomery
ALABAMA MACH. & SUP. CO.

ARIZONA—Phoenix
O'CONNELL BROTHERS, INC.

ARKANSAS—North Little Rock
LEWIS-DIESEL ENGINE CO.

CALIFORNIA—Berkeley, Fort Bragg
WEST COAST ENGINE & EQUIP. CO.

Los Angeles
ANDERSON-O'BRIEN CO.

Stockton
MOORE EQUIP. CO., INC.

COLORADO—Denver
COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

CONNECTICUT—Hartford
HOLMES-TALCOTT, INC.

FLORIDA—Jacksonville, Miami
GENERAL MOTORS CORP.
Florida Diesel Engine Sales

GEORGIA—Atlanta
BLA OCK MACH. & EQUIP. CO.

Savannah
MORGANS, INC.

IDAHO—Boise, Idaho Falls, Twin Falls
SOUTHERN IDAHO EQUIP. CO.

ILLINOIS—Bellwood
D. D. KENNEDY, INC.

INDIANA—Lawrence
FLESCHE, MILLER TRACTOR CO.

IOWA—Des Moines
STEPHENS-JONES, INC.

KANSAS—Grand Bend, Wichita
DIESEL EQUIPMENT CO., INC.

KENTUCKY—Lexington, Louisville
BOGIE EQUIPMENT COMPANY

LOUISIANA—Grand Island, Harvey
GEORGE ENGINE CO., INC.

Shreveport
UNITED TOOL CO.

MAINE—Portland
EASTERN TRACTOR & EQUIP. CO.

MARYLAND—Baltimore
MCCLEUNG-LOGAN EQUIP., INC.

MASSACHUSETTS—Boston
CLARK-WILCOX CO.

MICHIGAN—Detroit
EARLE EQUIPMENT CO.

MINNESOTA—Duluth, St. Paul
BORCHERT-INGERSOLL, INC.

MISSISSIPPI—Jackson
TAYLOR MACH. WORKS

MISSOURI—North Kansas City
K. C. DIESEL POWER COMPANY

St. Louis
WESTERN MACH. & ENG. CO.

MONTANA—Billings, Hardin
SEITZ MACHINERY CO., INC.

Kalispell, Missoula
MOUNTAIN TRACTOR COMPANY

NEBRASKA—Omaha
FEHR'S TRACTOR & EQUIP. CO.

Scottsbluff
COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

NEVADA—Reno
SIERRA MACHINERY CO., INC.

NEW MEXICO—Albuquerque
THE HARRY CORNELIUS CO.

NEW YORK—Buffalo
BROCK TRACTOR COMPANY, INC.

New York City
GRIFFIN EQUIPMENT CORP.

Syracuse
L. B. SMITH, INC.

NORTH CAROLINA—Beaufort
MACHINE & SUPPLY CO.

Greensboro
E. F. CRAVEN COMPANY

NORTH DAKOTA—Fargo
SWEENEY BROS. TRACTOR CO.

OHIO—Cleveland
GREAT LAKES DIESEL CO.

Columbus
CENTRAL OHIO TRACTOR CO.

Staubenville
RAY C. CALL COMPANY

OKLAHOMA—Oklahoma City
DIESEL POWER COMPANY

OREGON—Portland
GUNDERSON BROS. ENGRG. CORP.

PENNSYLVANIA—Philadelphia
FRANTZ EQUIPMENT COMPANY

Pittsburgh
HIGHWAY EQUIPMENT CO.

Wilkes-Barre
STANDARD EQUIPMENT CO.

SOUTH CAROLINA—W. Columbia
VAN LOTT, INC.

SOUTH DAKOTA—Sioux Falls
SIOUX ROAD EQUIPMENT, INC.

TENNESSEE—Chattanooga
NIXON MACH. & SUP. CO., INC.

Memphis
LEWIS-DIESEL ENGINE CO.

TEXAS—Corpus Christi, Dallas, Houston,
McAllen, Wichita Falls

STEWART & STEVENSON
SERVICES, INC.

El Paso
EQUIPMENT SUPPLY CO., INC.

Plainview
DIESEL POWER, INC.

UTAH—Salt Lake City
Cate Equipment Co., Inc.

VERMONT—Barre
HILL-MARTIN CORPORATION

VIRGINIA—Richmond, Roanoke
BEMISS EQUIPMENT CORP.

West Norfolk
WESTERN BRANCH DIESEL SALES &
SERVICE

WASHINGTON—Seattle
EVANS ENGINE & EQUIP. CO., INC.

Seattle
YUKON EQUIPMENT CO., INC.

Spokane
MODERN MACHINERY CO., INC.

WISCONSIN—Milwaukee
DROTT TRACTOR CO., INC.

WYOMING—Casper
COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

GM Diesel Case History No. 517-28
USER: U.S. Steel Company--
McDonald, Ohio, slag dump.
INSTALLATION: 4 Euclid 15-ton rear dumps
powered by GM 6-71 Diesels. 2 Haiss loaders
powered by GM 3-71 Diesels. Allis-Chalmers
HD-5 tractor powered by GM 2-71 Diesel.
PERFORMANCE: Each of the engines in the
Euclids has operated 11,000 hours to
date without overhaul.* 3 Euclids
hauling to crusher handle 2100 tons
per 10-hour day on 500 to 1000-yd.
haul cycles.* Piston rings
replaced in 3 engines at 10,000 hours.



THIS DIESEL has worked 11,000 hours without overhaul

Power users who standardize on General Motors Diesel for all equipment on the job, as U. S. Steel has done in this particular operation, can be sure of maximum return on their investment. GM Diesel's faster acceleration means more work output and smoother 2-cycle

operation means less wear and longer engine life. And, with most parts interchangeable, all Series 71 engines can be serviced with one small stock of basic parts. We're simply reporting what contractors and industrial users have told us when we say—

It pays to Standardize on

Write for booklet "A \$0,000,000 Horsepower Insurance Policy" that tells you why.



DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

SINGLE ENGINES . . . 32 to 275 H.P. MULTIPLE UNITS . . . Up to 800 H.P.

Sewage Plant Built For City of Tacoma

Contractor Rushes Big Job to Correct Serious Pollution of the Puyallup River and Commencement Bay

By RAYMOND P. DAY

• THE City of Tacoma, Wash., has never until now had a sewage-treatment plant, for the simple reason that raw sewage has always been dumped into the Puyallup River or Commencement Bay. The pollution resulting from this practice did not become particularly obnoxious until about the time of World War II. Then an engineering study was made and Tacoma's first sewage-treatment plant is the result. A \$1,300,000 installation, it is situated

just over the River Street Bridge in low tidelands near the banks of Puyallup River. Hoagland-Findlay Engineering Co. of Seattle had the construction contract with the Department of Public Works of the City of Tacoma. All told, the City expended some \$3,000,000 for the sewage plant and various trunk lines.

Background and Design

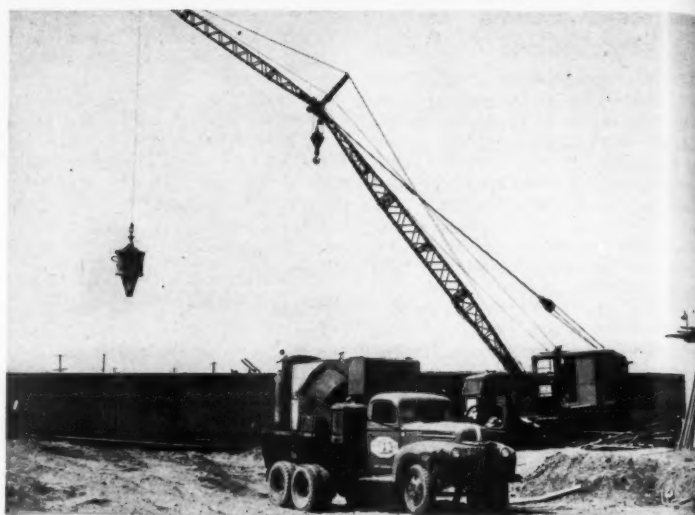
At the close of World War II, when the engineering study was made, the sewage-disposal problem was twofold. First, several long and expensive trunk sewers were required to serve outlying areas in which sewers were not available. Secondly, pollution in Commencement Bay had reached the point where it could no longer be ignored.

The design and construction of the trunk lines was undertaken first. While this work was in progress, long and exhaustive studies were made to determine what type of sewage disposal would be best and most economical.

Commencement Bay is one of the many indentations in the shoreline of Puget Sound. It is nearly 2 miles wide and about 3 miles long, with the Puyallup River discharging into the upper end. Tacoma is located principally along one side of and back of the bay. Considerably more than half the sewage of the city has always been discharged either into the river or into the dead water at the upper end of the bay. The remaining portion has been discharged through several trunks along the outer shoreline of the bay.

Engineering studies showed that if the outer-shoreline trunks were extended to a point of discharge 40 feet below MLLW, the currents would be sufficient to carry the sewage out into the channel. Expensive treatment could thus be avoided for some time, although probably not indefinitely.

The sewage discharging into the head
(Continued on next page)



C. & E. M. Photo

Unloading concrete at the Tacoma job site, a Lorain Moto-Crane swings a 1-yard Gar-Bro bucket. In the foreground is a Ransome truck mixer.



**SAFWAY
SHORE**

is

- ★ Micro-Adjustable
- ★ One-Man Operated
- ★ All-Steel Built
- ★ Self-Contained

Substantial time and money savings can be realized on all your shoring jobs by using the new SAFWAY SHORE to support forms for concrete slabs, beams, columns, walls, tunnels, etc.

Heavier load-carrying capacities to 9,900 lbs. permit wider shore spacing, reducing the number of shores needed, erecting and dismantling time. Shores are easily carried, positioned and adjusted by one man. These profitable Safway advantages help complete jobs faster:

NO NAILING REQUIRED—In most cases, if upright. U-shaped head plates seat 4 in. or lapped 2 in. lumber.

FAST ADJUSTMENT—Upper member is extended to approximate adjustment and fastened with pin... then sleeve nut is rotated, elevating head to exact height required.

NO BRACING NECESSARY—At heights to 12 ft., under most conditions. Bracing brackets available for greater heights.

ONLY 3 SHORE SIZES—Cover a range from 6 to 15 1/2 ft. above mounting surface. Each size permits a 5 ft. adjustment range.

PROTECTED THREADS—Sleeve nut covers threads during transportation and storage, protecting them from damage, rust, concrete, etc.

NO CLOSE DECKING—On high work. Shores easily mounted on legs of standard Safway frame-type scaffold to increase elevation.

Write for this Free Bulletin

RENTED and SOLD
by distributors everywhere

SAFWAY
STEEL PRODUCTS, INC.
6240 West State St.
MILWAUKEE 13, WISCONSIN
Tubular Steel Scaffolding and Equipment

WET JOBS

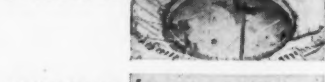


Whether it's

HEAVY
CONSTRUCTION



BUILDINGS



SEWERAGE

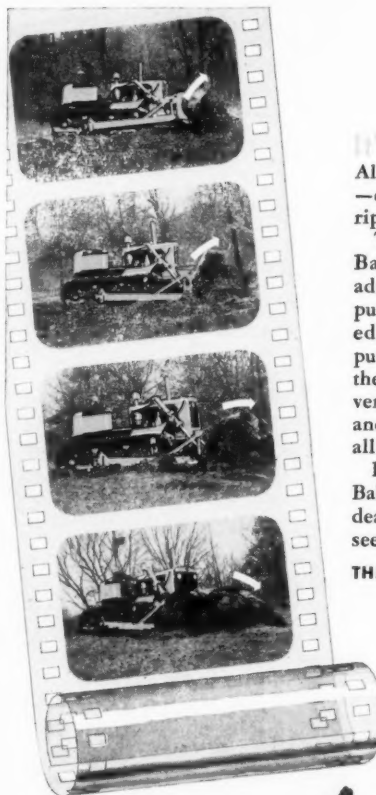
or any other
type of
wet work

For "quick-dry" ... specify ...

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.



It's easy dozing with Baker, Allis-Chalmers matched equipment—either for dozing, gradebuilding or ripping roots and rocks.

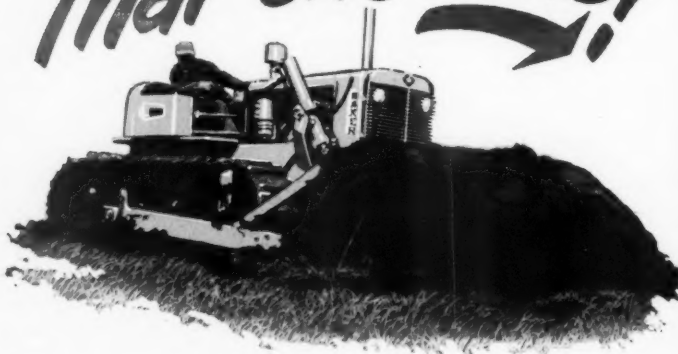
The "move-more-dirt" curve of Baker's famous involute blades, added to the design feature which puts the tractor weight on the cutting edge, leaves maximum power for push. These Baker features help make the Baker, A-C team the most maneuverable—the most easily operated, and thus by far the most productive of all earth moving equipment.

Don't settle for anything less than Baker, A-C! See your Baker, A-C dealer. Get on the bandwagon and see for yourself—

THE BAKER MANUFACTURING CO.
Springfield, Illinois

Wherever you see the Baker, A-C team at work, you see action like that pictured above, in photos of a conservation job near Lanark, Illinois. It's an Allis-Chalmers HD-9 with Baker Bulldozer.

Thar she rolls!



P. S. Have you seen the new 9-X no push beam dozer?

end of the bay, however, had virtually no chance of reaching the outer channel because of the lack of sufficient currents. This sewage, representing about half the total volume, either had to be treated or piped out toward the end of the bay. Because of the length of line and the volume of sewage involved, such a project would have cost more than a treatment plant. In addition, it would have had only a temporary value. The obvious conclusion was that a primary treatment plant was necessary.

The current population to be served by the plant is about 70,000. Preliminary calculations indicated a 10-mgd plant. But weir measurements of one of the largest trunks leading to the plant showed an alarming infiltration of underground streams and drainage water into the line. As a result, it became necessary to design a plant with a capacity of 27 mgd.

Intercepting sewers were, of course, indicated, to pick up the sewage at each existing outlet and convey it to the plant site. During times of high storm runoff, all the sewers combined will carry many times the dry-weather flow for which the plant is designed. At the junction of each trunk with the interceptors, overflow structures had to be provided to permit a given amount of sewage to flow into the plant while the rest is discharged into the bay.

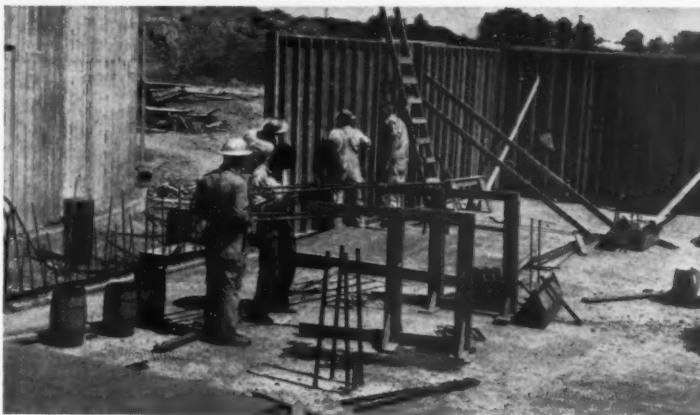
It can thus be seen that the plant had to be designed for about three times the normal volume of sewage, but it also followed that the sewage would be proportionately weak. Normal domestic sewage usually carries a BOD load of about 300 ppm, and the same for suspended solids. Tacoma's sewage will carry a BOD and suspended-solids load of something under 100 ppm.

The treatment plant is on the shore of the river about a mile upstream from its mouth. The effluent will be discharged into the river and carried out into the bay. A reasonably high degree of solids removal is planned. The effluent should have a BOD and suspended-solids load less than the river water itself.

Design work was handled both by the Tacoma Department of Public Works and by the San Francisco consulting firm of Clyde C. Kennedy. In addition, Mr. Kennedy was retained as a consultant on the entire project.

The plant proper consists of a pumping station, Parshall flume, grit-removal mechanism, sedimentation tanks, chlorine diffuser, digesters, elutriation tanks, and vacuum filters. The filtered sludge cake will be removed from the premises as it is produced.

The pumping plant is under the same roof as the administration building, which houses the office, laboratory, chlorine-storage room, lunch room, etc. Among other features, a gas-detection device installed in the incoming sewer not only sounds an alarm but sets in motion a supplementary blower in the wet well of the pumping station in the event that any obnoxious gases come down the sewer. The pumping station is equipped with one unit of each of the following capacities: 4,000; 8,000; 10,000; and 12,000-gpm. These are connected to cut in and out automatically as required. Even the order of rotation will be automatically changed at proper intervals to make sure the pumps get



C. & E. M. Photo

In the central yard on the sewage-plant project for the City of Tacoma, steelmen the reinforcing bars while carpenters set up a wooden form.

comparatively even wear.

The rectangular sedimentation tanks are 75 feet wide and 185 feet long. They are equipped with pre-aeration units,

and it is hoped that a high degree of removal of solids will be the rule.

Chlorination is handled by a flash mixer rather than a contact chamber,

as this equipment saves a considerable sum in initial cost.

A primary and secondary digester are employed, together with conventional elutriation and filtration. Indications are that there will be plenty of demand for the filter cake for fertilizer, at a price yet to be determined. The plant as constructed at this time serves a population of 100,000 people, and there is ample room at the site for enlargement to a 200,000-person plant. Tacoma is not likely to grow much larger than that within its present topographical limits.

Job Starts in January

Work started near the first of the year in 1951, at a time when weather and the water table were at their worst. Clearing, excavation, and pile driving for the various structures began almost simultaneously. Each building in the plant rests on a wood-pile foundation. All told, there were some 61,000 linear feet of piles in the project.

(Concluded on next page)

Scrapes and hauls 13-yard load

...with help of TIMKEN® bearings

THIS Be-Ge Model ST-85130 Speedhaul scraper can scrape and haul a 13-yard load of dirt. To keep it on the job with less time-out for maintenance and lubrication, The Be-Ge Mfg. Co., Gilroy, Calif., mounts the wheels on Timken® tapered roller bearings.

Be-Ge has found that closures are more effective because Timken bearings keep housing and shaft concentric. Dirt, mud and water are kept out—lubricant is kept in. Lubrication

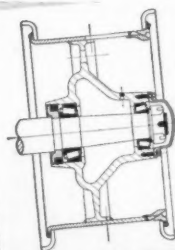
and maintenance time are reduced, scrapers are ready to go when needed.

Due to line contact between the rollers and races, Timken bearings have the tremendous load-carrying capacity needed for heavy-duty scrapers. The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. And friction is practically eliminated because of the incredibly smooth surface finish and true rolling motion of Timken bearings.

No other bearing gives you *all* the advantages you get with Timken tapered roller bearings. Make sure you have them in all the equipment you build or buy. Always look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



How THE BE-GE MANUFACTURING COMPANY mounts Timken tapered roller bearings in the wheels of its Speedhaul scraper.

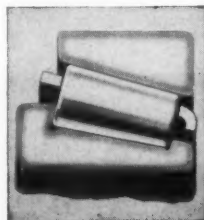


ROETH



CONCRETE VIBRATORS MOUNTED ON WHEELBARROW CHASSIS

Write for details and prices
ROETH VIBRATOR CO.
1737 Farragut Ave., Chicago 40, Ill.

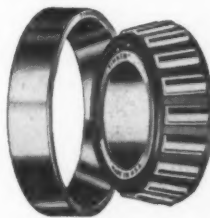


GREATER LOAD AREA

Because the load is carried on the line of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN
TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

Sewage Plant Built For City of Tacoma

(Continued from preceding page)

Hart Construction Co. of Tacoma did the pile driving under a subcontract. A small skid rig moved in. It carried a set of steel leads and a Vulcan steam pile hammer. Working from wooden cribbing, this machine accounted for all the driving.

Simultaneously, crews of Hoagland-Findlay were busy whipping a bad ground-water problem. Some of the building foundations went down to a point 2 feet under MLW sea-level elevation, and ground water started at elevation plus 18. Two strings of Stang wellpoints were installed and connected to 10-inch header pipe, and two Stang vacuum pumps went to work. The water went down about 10 feet, and the tight ground caused the points to choke up. Fir 2 x 12's were then driven at the excavation toe in the deep buildings, and about 3 feet of coarse rock was placed to act as a filter. A Jaeger 6-inch pump was installed, leaving the well-points and pump in place. This handled the water, and draglines could then muck out the holes.

Excavation was done by two Northwest draglines, with occasional help from two Link-Belt Speeder machines. The ground was composed of fine alluvial silt deposited by the Puyallup River, and in many places there were pockets of soft ooze to be removed. A homemade bailing bucket 3 feet square and 6 feet deep was rigged to take care of this material. In one case it became necessary to do some triple casting to get the excavated material out of the hole and over to a spoil area.

Forming and Concrete

All forms were prefabricated in panels by carpenters in a central headquarters yard on the site. The completed panels were then trucked over to the structures, set in place by a Lorain Moto-Crane, and fitted together. Ply-glazed plywood facing was used for all exposed concrete, and 1 x 8-inch fir shiplap was used on unexposed surfaces which were to be covered by backfill.

In the central yard were 2 Comet power saws, a Wallace band saw, and numerous Porter-Cable Speedmatic hand saws. The panels consisted of facing, 2 x 4 studs, and doubled 2 x 4 wales. Burke form ties held the faces in position.

Placing was a relatively simple operation, but it caused General Superintendent N. H. Daniels plenty of concern at the start, during the wet spring months. In the first placing month, Daniels accounted for only 800 cubic yards, but production rose during the next two months to over 5,600 cubic yards.

George Scofield Co. of Tacoma had the materials contract for the concrete, which was delivered to the job in truck mixers and either unloaded direct to the pours or transferred by one of the Northwest or Lorain machines. A 1-yard Gar-Bro bucket was used in such cases. Mall gasoline vibrators consolidated the mix, and water sprinkling was used as a concrete cure.

Digesters Prestressed

A load of approximately 22,500 pounds per square foot was applied to the two digesters by the prestress method. The digester walls were formed and poured in 8 sections, like the staves of a barrel. Embeco cement grout was then placed on the panel edges, and the stress load applied.

The prestressing device consisted of 1-inch steel rods with 8 turnbuckles. The rods were only 3½ inches apart at the base of the digesters, but this spacing gradually increased to 18 inches at the top of the 12-inch x 24½-foot walls. Formed slots at appropriate points permitted the turnbuckles to be tightened.

They were applied in the same way as barrel staves, and after the stress was established, a 3-inch coat of mortar was pneumatically applied. When the digesters are in use, they will have an effective side-water depth of 22 feet.

By December 15, 1951, Hoagland's men had the new plant ready for operation, well ahead of schedule.

Personnel

Directing the over-all project for the City of Tacoma is Jack Roberts, Commissioner of Public Works, with C. S. Seabrook as Sewer Superintendent and Lou Fox as Designing Engineer. Clyde C. Kennedy of San Francisco is active in a personal consulting capacity.

For the Hoagland-Findlay organization, N. H. Daniels was General Superintendent, assisted by Jim Hoagland. Red Harris was Project Engineer, Chet Daniels was Carpenter Foreman, and Frank Clark was Labor Foreman.

Completion of the new treatment plant assures Tacoma of at least a primary facility which will go a long way

toward the correction of a pollution evil which was getting out of hand before engineers and contractors stepped in to remedy it.

Helps Select Right Tool

A rotating disk-shape chart speeds selection of the right tool for servicing crawler tracks. On its circumference, in a color coding, are listed types of equip-

ment made by Caterpillar, International, John Deere, Allis-Chalmers, and Oliver. When the disk is rotated, the tool numbers of various adapters, pins, pushers, and collars are read on a scale under each equipment type.

The 8-inch-diameter selector may be obtained from Rodgers Hydraulic, Inc., St. Louis Park, Minneapolis, Minn., or by using the Request Card at page 16. Circle No. 900.

"BERG" Concrete Surfacers



A light-weight, portable, electric motor-driven Concrete Surfacers consisting of the Model R2 Right Angle Head and Model AS Motor Unit.

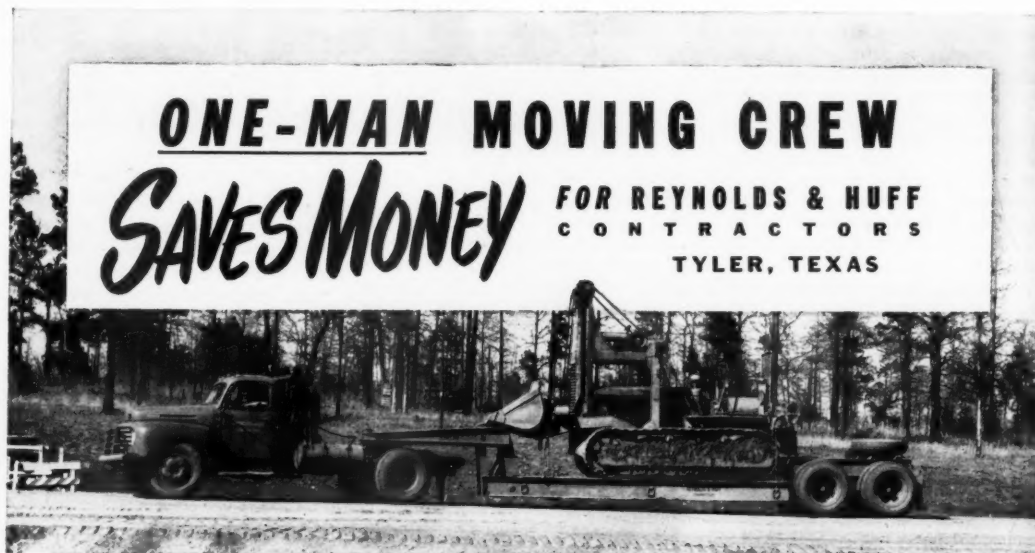
Ideal for surfacing concrete buildings, bridges, dams, walls and many other applications.

Quickly converted into the Model V2-AS Concrete Vibrator for internal vibration by substituting the Model V2 Vibrator Unit for the above Head.

The Concrete Surfacing Machinery Co.

4665-4669 Spring Grove Avenue

Cincinnati 32, Ohio



ONE-MAN MOVING CREW SAVES MONEY

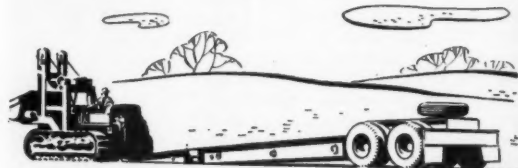
FOR REYNOLDS & HUFF
CONTRACTORS
TYLER, TEXAS

ONE MAN LOADS ANY EQUIPMENT WITH MARTIN "FOLDING GOOSENECK" TRAILER!

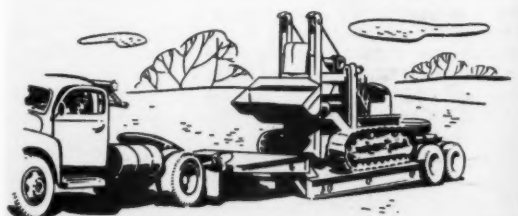
Tractors, Scrapers, Shovels, Rollers, Draglines — every piece of equipment in the fleet of Reynolds & Huff is hauled with a MARTIN "Folding Gooseneck" Trailer — and one man makes all the moves!

They've eliminated the time and expense of building and blocking ramps — and turned the time it took into productive work-time. One man loads any piece of equipment in less than five minutes and unloads just as fast.

Let one man make your moves with a MARTIN "Folding Gooseneck" Trailer — save time and increase profits! There's a size and type for your equipment — Get one, start boosting your profits. See your MARTIN "Caterpillar" Dealer for full details and specifications.



The truck-driver can't miss the wide ramp formed by the folding gooseneck. There's no danger of tipping and the slope is gentle enough for any unit to climb.



Three minutes later, the truck-trailer is ready to roll. Note the low overall height of trailer and equipment.

MARTIN

U·P·O·U·L·E·P·O

MARTIN MACHINE CO.
KEWANEE, ILLINOIS, U. S. A.

New 6-Yard Excavator

A 6-cubic-yard Ward-Leonard electric excavator is announced by Bucyrus-Erie Co., Box 56, South Milwaukee, Wis. The lower boom section of the Model 150-B is rigidly connected to the A-frame, making it an integral part of the machine. Widespread boom feet eliminate sway braces. The upper boom section is pin-connected to the lower boom section and is suspended from the A-frame by fixed-length bridge strands.

The dipper handle is tubular and free to rotate in a cylindrical saddle block which contains rubber cushions to absorb shock loads during plugging of the swing. Single-part doubled hoist ropes are attached with an equalizing sheave to each side of the dipper. The conventional dipper ball is not used.

Crowd and retract are accomplished by twin ropes, and the crowd machinery is at the forward end of the revolving frame instead of on the boom, thus reducing swing inertia. The tubular handle, free to rotate, and the rope crowd and retract contribute to low front-end maintenance.

A dual twin hoist automatically applies hoisting effort where needed on the dipper lip and teeth to cut through local obstructions in the bank. The dipper moves upward steadily in its digging stroke rather than detouring obstructions. The relatively light weight of the tubular handle and a favorable relationship between hoist and crowd power give a maximum of available digging effort to the shovel dipper.

Treads are of box-section design for hard service. Idler rollers are large in diameter and have their bearings located well above mud and dirt under ordinary conditions. Efficient seals are provided to eliminate entrance of abrasive material into the bearings. Rapid change is provided between hoist and propel to facilitate quick move-ups and prompt travel away from dangerous faces if required.

The shovel is fully convertible to a dragline, with the drag and hoist functions operated by independent electric motors.

Further information on this new 6-yarder may be secured from the company. Or use the Request Card at page 16. Circle No. 852.

Portable Drawing Board

A bulletin describing a new portable drawing board molded from lightweight Bakelite styrene plastic is available from A. Partrick Co., Division of Grove Electric Co., 9 Grove St., Westwood, N. J. The board consists of a single molded piece of plastic, 9 3/4 inches x 12 1/4 inches. Four corner clamps for attaching 8 1/2 x 11 paper are recessed into the plastic so that the triangle or roller can ride freely over them without interference. Two metal straight-edges, one vertical and one horizontal, are retractable so that the triangles can be moved over all four edges of the paper. Thirty, 60 and 45-degree triangles can be stored in recesses underneath the drawing board and can be clamped securely in place.

The literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 923.



Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdy constructed instruments that will automatically show the operator the exact grade or slope on which he is working.

Order from Your Equipment Distributor Today

THE SLOPE-METER CO.
EXCELSIOR, MINNESOTA



Bucyrus-Erie has incorporated features of its large stripping shovels and draglines in the 6-cubic-yard Ward-Leonard electric excavator, the Model 150-B.

New Water Repellent

A silicone-type water repellent for all types of masonry is announced by Williams Form Engineering Corp., 1501 Madison Ave., S. E., Grand Rapids 7, Mich. Crete-Driseal is sprayed or brushed on the surface, and will develop resistant properties after about 6 hours. It can be used on both concrete or block walls, before oil-base paints and after water-base paints.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 914.

Folder on Self-Priming Pumps

A folder on a line of self-priming pumps is issued by Gorman-Rupp Co., Mansfield, Ohio. Models from 2 to 10 inches are mounted on a base or steel-wheel truck. Extra lightweight units are also available.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 878.

Wherever You are...

PARTS and SERVICE
are readily available for
Ford
**INDUSTRIAL ENGINES
AND POWER UNITS**



Ford Dealers carry
large stocks of normal
engine replacement parts.



Quick service is
as near as the local
Ford Dealer.

● Ask any equipment builder what he has found to be increasingly important in selling his product. Or ask the actual operators of industrial powered machinery the things that most seriously affect profitable operation.

Both manufacturers and users will agree on these two points: (1) Ready availability of replacement parts, and (2) Convenient service facilities.

Nothing is more irritating to the operator of powered equipment than "downtime" lost in awaiting delivery of parts from some distant warehouse; or locating a good mechanic who knows all about the engine when service is sorely needed.

Equipment builders who specify Ford Industrial Engines or Power Units for their products automatically overcome this problem. And users who are replacing their worn-out engines with new Ford Power have also found this is the right answer.

Because . . . Ford Dealers are located virtually in every city, town and village. There are more than 6400 of them, PLUS independent shops everywhere that also carry Genuine Ford Parts. Wherever you are, Ford Parts and Service are "right around the corner." Yes, experience is fast proving that Ford Industrial Engines, built to Ford's famous high-precision standards, are —

RIGHT 3 WAYS for your job:

1—RIGHT POWER 2—RIGHT FEATURES
3—RIGHT SERVICE



**INDUSTRIAL ENGINES
AND POWER UNITS**

CLIP AND MAIL COUPON TODAY!

INDUSTRIAL ENGINE DEPARTMENT
FORD MOTOR COMPANY
15050 Woodward Ave., Highland Park 3, Mich.
We are interested in Industrial Power for:

(state your application)
Send us 1952 literature on Ford Industrial Engines checked below:
☐ "120" 4-Cyl. ☐ "215" 6-Cyl. ☐ "239" V-8
☐ "254" 6-Cyl. ☐ "279" V-8 ☐ "317" V-8
☐ "MULTA-TORQUE" Converter

Firm Name _____ (Please Print)
Street _____
City _____ Zone _____ State _____ T

6 GREAT ENGINES

designed and built for industrial use

Ford Industrial Engines are now offered in six series: One 4-cylinder, two 6-cylinder and three V-8 cylinder, ranging from 120 to 317 cu. in. displacement. All are available as complete power units or as individual engine assemblies. Write for descriptive literature on these engines and also the—

NEW FORD MULTA-TORQUE CONVERTER

**YOUR JOB IS WELL-POWERED
WHEN IT'S FORD-POWERED**

Iowa Counties Seek Answer To Shortage of Aggregates

County and Contract Forces Use Plant and Road-Mix Methods To Stabilize Soil-Aggregate Bases and Surfaces

• THE steel crisis is foremost in the minds of most highway department men today—tomorrow, though, it may well be the shortage of adequate supplies of road-building materials. Depletion of mineral resources is a nation-wide problem and the highway departments are no less vulnerable to this malady than the steel, copper, aluminum, or other industries, all of which depend upon the earth's bounty for the resources with which they build. It is an entirely valid statement that at present the problem is faced only in small geographic areas—and with aggregate deposits—and is experienced for the most part only by county road departments, which yearly consume thousands of tons of gravel and stone to maintain their secondary road systems. But the problem grows. Each yard of gravel scooped from a river bank, each ton of stone quarried from a hillside is forever lost to future use. Many counties now find aggregate supplies entirely depleted within their boundaries—this in barely 25 years of road building. What, then, will the next 25 bring? Certainly not an increase in the total available supplies.

There are of course many answers to the problem, but apathy is not one of them. It is important that all highway engineers and road-building contractors tackle the problem earnestly. Barring some unique find in the way of new materials, or some revolutionary method of getting supplies from the depths of the earth, the basic solution lies in conservation of present supplies. For this reason, the work recently undertaken jointly by Iowa's county road departments and the Iowa State Highway Commission merits further study. Iowa's experimental program in soil stabilization seems to offer a promising method of conserving aggregate supplies—those that already lie on the road and those still unused in borrow pits and quarries.

L. M. Clauson, of the Iowa State Highway Commission, outlined developments along these lines at the 50th Anniversary Meeting of the American Road Builders' Association, in Houston, Texas, last January. Well aware of the cause of the problem and, as the Commission's Director of Secondary Road Surfacing Problems, well informed on the current trial solutions, he gave a detailed description of the program under way in Iowa.

Iowa a Case Study

Iowa requires nearly 79,000 miles of all-weather secondary roads to serve its rural population of 1,400,000. The inadequacy of the soil as a road-building material and the depletion of gravel and limestone deposits in many areas aggravate the problem of providing and maintaining good roads. With the arrival of the automobile on the agricultural scene, road-surfacing practice progressed from limited use of planks and waterbound macadam to the rather liberal use of bank-run gravel and crushed stone. The tremendous demand for improved roads in more recent years has rapidly depleted the known deposits of these materials in Iowa. The surfacing problem now consists in providing good highways at reasonable and justifiable costs for each farm

production unit in the state. The solution must inevitably be based upon the most economical use of locally available

materials, not only for initial construction, but also for future maintenance needs.

The situation in Iowa's 99 counties can be classified in three general categories: counties that do not have, and have never had, adequate supplies; counties that do have sufficient supplies at present; and counties that have gravel or limestone resources, but whose known supplies are now rapidly approaching exhaustion. There are few remarks one can make about those counties in the first group; they just don't have aggregate resources. The second group may or may not be facing a critical problem—that of moving into the third category. The peril of the counties in the third group is imminent. A reasonable solution to the problem is

necessary if they are to maintain the present road system in usable condition and improve it with added mileage and better surfaces.

Various counties in Iowa have undertaken experimental programs, with the assistance of the State Highway Commission, in an attempt to solve the problem. The current program includes the stabilization of subgrades, bases and wearing surfaces by the addition of granular aggregates, soil binders, calcium chloride, portland cement, and bituminous materials. The variety of treatments is due in part to the wide variety of soil types encountered, and in part to the uneven distribution of granular-material deposits suitable for highway use. Though road-building

(Continued on next page)

"Big Red"

Choice of the Nations Fleet Owners

EVERY CONTRACTOR LISTED HERE OWNS

GENERAL CONTRACTORS

NAME
Abernathy, T. J.
Ace Construction Company
Amis Construction Company
Anderson & Gregory
Arbore, Inc. John
Armstrong Company, J. D.
Arute Brothers
Asphalt Paving Company
Atkinson, Guy F.
Atlas Constructors
Bar & Company, Roy L.
Beard Construction Co.
Best and Bartel
Bianchi and Co., Inc. C.
Blaw-Knox Construction Company
Bloomer & Son, John S.
Blythe Bros. Company
Bradford Construction Company
Brewster & Son, Inc., G. M.
Brown Brothers
Brown Construction Company
Brown Const. Co., G.
Brown and Root, Inc.
Bryhill & Sons, M. P.
Campbell & Collins
Chancellor, Ben
Chancellor, J. R.
Clarkson Const. Company
Collins and Sons, Wm.
Construction Aggregate
Cordell & Johnson
Crawley Const. Co., P. E.
Daufenbach, Wm.
Davis Construction Corp.
Dickinson, W. M.
Delta Drainage & Const. Co.
Delicola Contracting Co.
DeShong, Leno
Devos Brothers
Dicherson & Winkelman Co.
Eastley Construction Co.
Eckhardt, Hilding
Farino Equipment Company
Fisher Construction Co.
Fisher Contracting Co.
Foley Brothers
F and S Contracting Co.
Fuller-Davies
Funderburk Construction Company
General Contracting Co.
Gibbons & Reed Const. Co.
Gilbane Building Co., Inc.
Gilbert Engineering Co.
Gilliland, William
Gillisse, John and Paul
Good Construction Co., C. W.
Granite Construction Co.
Gray, Inc., Leo G.
Green Construction Company
Griffiths, Wm. C.
Griffin Construction Co.
Guthrie Const. Company
G and Z Contracting Co.
Hable, E. W.
Hall, Fred
Haverson Construction Co., C. M.
Haverson Const. Co., H.
Hamann, Walter
Harlan Construction Co.

GENERAL CONTRACTORS

NAME
Hawthorne, Robert
Hendrickson Brothers
Hertford Construction Co.
Hicks, Harry D.
Hile, Henderson
Higman and Wondra
Holtzman and Son, W.
Holloway and Thompson
Hubner, C. L.
Hulme Const. Co., Charles
Hunt Const. Co., Arlon
Hunter Construction Co.
Inter-City Sand & Gravel Co.
James Const. Co., Guy
Jarrell, L. L.
Jeffers, Inc., P. R.
Jorgensen, John
Kawano and Nishida
Keesley Construction Company
Kluck Construction Company
Kraus Company, Samuel
Kuykendall, Crockett
Kuykendall, J. A.
Langenfelder & Son, Inc., C. J.
Langley, Robert
Latin-American Eng'g Service
Lee-Union Contractors
Lively & Lindsay
Logan & Sons, W. E.
MacDougall Const. Co.
Mackie Const. Co., Arthur
Malison Const. Company
Maloney, J. T.
Mangum, C. C.
Mayer and Otto
McCarthy-Pohl Const. Co.
McDearmon, George
McDonald and Kruse
McGraw Construction Company
McGraw & Company, F. H.
McLara, Foster
McVier Construction Company
McKee Construction Company
Metcalfe-Hamilton Company
Miller Excavating Company
Mills Construction Company
Mills Company, Ralph E.
Mittry Constructors
Moorman & Son, J. W.
Morrison-Knutson Const. Co.
Morrisey, Inc., James D.
Moss-Thornton Co.
Muehlenbeck, Wm. J.
Mulligan Brothers
Nelson, W. F.
North Atlantic Constructors
Oahu Construction Company
Oliver, Russell
Osborn & Sons, G. A.
Osborn & Co., Inc., H. T.
Patterson Construction Co.
Perry Construction Company
Pettillo, Inc., Edward
Pioneer Constructors
Pohl Const. Co., Jos. L.
Pool Construction Company
Porter-DeWitt Const. Co.
Price, Osborne, Osborne, & Nelson
Pullen and Owens
Rankin and Williams
Rapone Contracting Company
Rayn & Sons, P. W.

GENERAL CONTRACTORS

NAME
Reardon & Reardon
Rider, Orval
Ruber Construction Company
Ruth Construction Company
Rutherford Corporation
Ryan Construction Company
Sacco, Peter
Sarafini Const. Co., Inc.
Savin Const. Co., A. I.
Schell, Ralph D.
Schlesinger and Patterson
Schutz Contracting Co., John
Scott, Inc., W. H.
Sharrack & Purcell
Silver State Const. Co.
S & M Construction Co., Inc.
Smalley, D. R.
Smith Construction Company
Smith, Otis, and Smith
Snare Corporation, Frederick
Solo Const. Company, Jos.
Steen-Grove
Stenkamp, Inc., E.
Stewart, Howard
Stone City Const. Company
Stovall, R. B.
Stuart, J. O. and C. M.
Swellentuss, James
Tango Construction Company
Teer Company, Hella L.
Teichert & Son, Inc.
Tenaku, J. M.
Texas Construction Company
Thompson, C. G.
Thornburg, Vance
Tomlinson, T. R.
Torrington Construction Co.
Tower Contracting Co., Doug
Treadwell, Inc., J. H.
Turpin & Stewart
Vaccillo and Grogan
Vinnell United Bell Company
Wartles, Lucy
Wernimont, John
Wester Construction Co.
White Oak Excavators
Winkelman Co., Inc., D. W.
Wright Contracting Company
Wright, John D.
Wyner & Company, Inc., Gil
Zara Contracting Company

MINING

NAME
Allen Brothers
A & H Coal Co.
A. & P. Mining Co.
Blair & Oldham Construction Co.
B & M Coal Co.
Bolling Construction Co.
Bortz & Bortz Coal Co.
Bortz, Earl M.
Calvert & Youngblood
Clark & Youngblood
Clark, Wm. H.
Cleveland Cliffs Mining
Coal Strappers, Inc.
Compass Coal Co.
Consolidated Coal Co.



contractors have performed most of the work, county forces have been used on occasion. Plant and road-mix methods have proved equally successful. Here, then, are some of the jobs in detail.

Asphaltic-Concrete Bases

Where increased traffic volumes have required improved roads, many counties have tried roads consisting of a machine-mixed cold-laid asphaltic-concrete base with a bituminous surface treatment, built at a cost of approximately \$4,500 per inch of thickness per mile for a 22-foot width. The thickness of the bases has varied from 3 to 5 inches, depending on subgrade and traffic conditions. The 3-inch bases generally overlie a 4-inch calcium-chloride-stabilized surfacing con-

structed the previous year. The 4-inch bases were built in counties where granular material has been added to the upper portion of the subgrade to produce a Proctor density of 2.00 or more. The 5-inch bases were necessary where plastic soils predominated in the subgrade.

The bituminous material used in the asphaltic-concrete mixture was either an MC-4 cutback or an SS-1 emulsion, at the option of the contractor. Design mix was 4.5 net pounds of asphalt per 100 pounds of aggregate. A single-course bituminous surface treatment consisting of 0.25 gallon of MC-4 and 25 pounds of 1/4-inch cover aggregate was applied to each square yard of base. The counties paid on the basis of the computed net tonnage of aggregate.

gate and asphalt produced and laid. Variation from the theoretical quantities was paid on a gallonage basis.

On a job in Black Hawk County, the contractor scarified the existing road-bed to a 6-inch depth, mixed the material, and windrowed it on the centerline of the road. Sheepsfoot rollers compacted the subgrade as graders bladed the material out to each side. A little watering and rolling with oscillating-wheel rollers gave the subgrade a compaction of 95 per cent of Proctor. The priming coat was an MC-0 applied at the rate of 0.2 gallon per square yard out to a 26-foot width. Dump trucks delivered the plant-mixed base to a bituminous finisher with vibrating screed. It placed the two 24 and 22-foot-wide 2½-inch-thick courses one

lane at a time. After compaction by the rubber-tire and flat steel rollers, the crews shot the surface with 0.2 gallon of MC-5 and covered it with 20 pounds of 1/2-inch stone to the yard.

A contractor in Lyons County placed the same type of base in two 2½-inch lifts using road-mix methods. He hauled his pit-run gravel out to the road, spread it on the primed subgrade, worked it with graders and spring-tooth harrows, and then windrowed it down the center line. Limestone dust was deposited on the windrow at intervals necessary to meet the spec. A tractor-drawn road mixer processed the dry material with MC-4 binder, then graders swept the mix back and forth a few times to reduce the moisture content, prior to rolling by rubber-tire compactors. A dressing down with the blade and finishing with steel rollers left a smooth tight surface.

Soil-Aggregates Bases

A mix of 90 per cent gravel and 10 per cent clay has made some good roads in Clay County. Done by contract in 1949, the base stabilization and heavy bituminous surface treatment cost the County just about \$11,000 per mile. The old road surface formed the subgrade for the new—after reprocessing to a depth of 6 inches. The clay and gravel came from county pits. The gravel was crushed to a 1½-inch-maximum size; while the clay was plowed and harrowed, to reduce moisture content, and then pushed through a ¾-inch screen. Truck drivers dumped alternate loads at proper spacings on the road. Motor graders combined the clay and gravel, folded it up, and windrowed it down the center. A traveling mixer added water and assured a complete mixing. Pneumatic-tire rollers followed by steel tandems finished off the surface. Top treatment was two layers of ¾-inch gravel (30 pounds to the yard), broomed, rolled, and shot with 0.3 gallon of MC-5.

Soil-Aggregate Surfaces

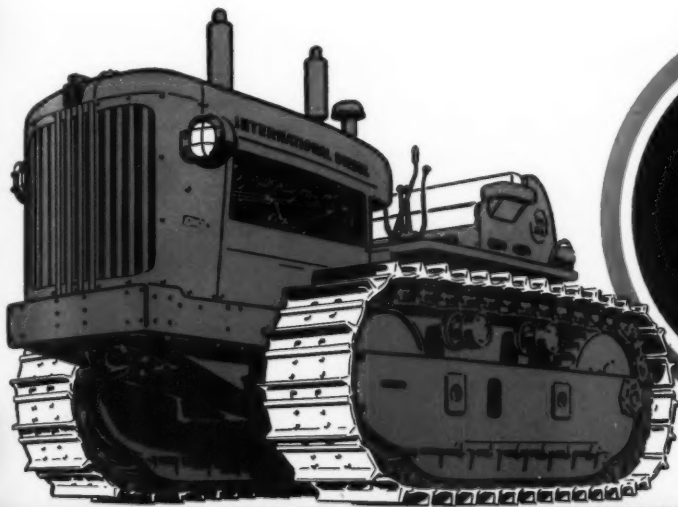
An accurately proportioned and thoroughly mixed combination of gravel, binder soil, water, and calcium chloride seems to be one answer to the shortage of aggregate resources. Soil-aggregate surfaces evidence two rewarding features—they conserve aggregates by holding the materials to the surface, thereby preventing loss over the shoulders, and at the same time they provide a tight, smooth riding surface that is easy to maintain. Most counties report reduced use of the patrol grader with this type of surface. The method is a particularly economic means of resurfacing old roads.

Black Hawk County forces do their own resurfacing. They first scarify and windrow the old surfacing to one side, then, depending on the condition of the subgrade, add 200 to 400 cubic yards of binder soil. The glacial till is available in nearly all parts of the county. Grader-blading the material back and forth and giving it several passes with a pulverizing mixer insures a thorough mix. After a couple of days of traffic compaction, the mixture is spread and shaped. They then add 500 to 800 tons of crushed stone per mile, depending on the roadway width and traffic demands. A surface application of calcium chloride produces a well compacted and smooth-riding surface.

Surface applications of calcium chloride are made at the rate of 4 to 5 tons per mile on an 18-foot width, or about $\frac{3}{4}$ to 1 pound per square yard. The total cost of the chloride, in place, is \$156 to \$190 per mile. The County feels the expenditure well justified. It helps consolidation, reduces gravel losses, cuts down dust, and saves money in patrol maintenance.

Road-Mix Methods

A contract for 23 miles of soil-
(Continued on next page)



FLEET OF BIG RED INTERNATIONAL TD-24s

MINING

NAME
 Canmet Phosphate Co.
 C. P. & Coal Co.
 Daugherty Coal Co.
 Bannville Coal Co.
 Drummond Coal Co. H. E.
 Gulfport Coal Co.
 Gateway Coal Mining Co.
 George Kaolin Co.
 Gray Ridge Coal Co.
 Hanna Coal Co.
 Henna Co., M. A.
 Hocking, Minnesota
 Huron, Berkeley
 Imperial Coal and Construction Co.
 Kelly Coal Co.
 King and Sons, H. B.
 Mays Coal Co.
 McCarell & Grimes
 McLean, Berkeley
 Michigan Limestone & Chemical Co.
 Mohr, Harry
 Newble Coal Co.
 Rex Shavert Mining Co.
 Ohio River Collieries
 Ohio Iron and Coal Co.
 Pendergrass, Zab
 Phelps Dodge Corp.
 Richards-Mather Co.
 Pichman & Greene
 Sims, Ted
 Kardin Bros.
 R. V. Contracting Co.
 Searles Coal Co.
 S. B. & S. Co.
 Seitz Coal Co.
 Slutzky, Robert
 Sherman, Joe
 Shawcross, Pennsylvania
 Shipman Contractors
 Tindley Bros., Inc.
 Treadwell, Inc.
 Udelb Co. Mines
 Wash Ridge Corp.
 Wilver Springs, Tenn.
 Whitaker Coal Co., H. B.
 Yates Coal Co.

NAME
 Abaco Lumber Co.
 Anderson, Mel
 Argo Coal Logging Co.
 Arroyo Mills
 Alameda Lumber Co.
 Bismarck Timber Co.
 Bowen Tie and Lumber Co.
 Buck Mountain Logging Co.
 Cal-Side Lumber Co.
 Carver Lumber Co.

LOGGING

Plant City, Florida
 Fairmont, West Virginia
 Terra Alta, West Virginia
 Weston, West Virginia
 Jersey, Alabama
 Levensboro, Pennsylvania
 Carlton Hill, Alabama
 Atlanta, Georgia
 Canton, Ohio
 Adena, Ohio
 Hibbing, Minnesota
 Heartwood, Maryland
 Rupert, West Virginia
 Beloit Knob, West Virginia
 West Virginia
 Clarion, Pennsylvania
 Sanders, Arizona
 Scottsboro, Ohio
 Rogers City, Michigan
 Liberty, Pennsylvania
 Nashville, Tennessee
 Weedsville, Pennsylvania
 Columbus, Ohio
 Coalbrook, Ribbing
 B & V, Minn.
 Butteville, Virginia
 Douglas, Arizona
 Hibernia, Minnesota
 Rutledge Mills, Pennsylvania
 Sliding Run, Pennsylvania
 Akron, Ohio
 Pennsylvania, West Virginia
 Pittsburgh, Pennsylvania
 Pottsville, Pennsylvania
 Parkersburg, West Virginia
 Philadelphia, West Virginia
 Hawthorn, Pennsylvania
 Newcasville, Pennsylvania
 Clearfield, Pennsylvania
 Mill Hope, West Virginia
 Newcasville, Illinois
 Healy River, Alaska
 Rasselgas, Pennsylvania
 River Springs, Tennessee
 Norton, Virginia
 Ashland, Kentucky

NAME

Cleasman Logging Co.
 Clostack Plywood Co.
 Terra Alta, West Virginia
 DeVillibus, C. Dudley
 Fitch Logging Co.
 Levensboro, Pennsylvania
 Ford, Donald A.
 Freshell Oil Co.
 Gooch Logging Co.
 Hammond Lumber Co.
 Hines Lumber Co.
 Crick, California
 Long Bell Lumber Co.
 Marekunas Logging Co.
 Mathews, S. S.
 McCallie Logging Co., B. L.
 McCallie Bros. Logging Co.
 McNeill Bros. Construction Co.
 Michigan-Caplan Lumber Co.
 Mortenson, Inc., Lea
 Neils Lumber Co.
 N. S. P. Logging Co.
 Opperman, Ralph
 Paul Bayview Lumber Co.
 Portland Creek Logging Co.
 Potlatch Forests, Inc.
 Rogers Logging Co.
 Rayonier, Inc.
 Rutledge Mills, V. R.
 Russell & Gillette
 Schuler Construction Co., J. F.
 Shawlow Forest Products, Inc.
 Smith Lumber Co., Ralph L.
 Smith, Ralph
 Squagum Falls Lumber Co.
 Stoddard, Roy
 Sweet Brothers Lumber Co.
 Ulrich, William
 Union Lumber Co.
 Vossbury & White
 Wecksaw Lumber Co.
 Werhauer-Timber Co.
 White River Lumber Co.
 Wilmette Valley Lumber Co.
 Woolley, Harold

NAME

Anderson Brothers
 Anderson Construction Co.
 Burlington Pipe Line Corp.
 Bechtel Corp.
 Bishop and Lock
 United Contracting Co.
 Burden Construction Co., O. R.

*The list of TD-24 fleet owners is growing every year, as is the vastly larger list of owners of single TD-24 tractors. For this reason the above list is not complete. If you're a TD-24 fleet owner whose name is missing, we'll catch you next time.

LOGGING

Portland, Oregon
 Cloverdale, California
 Williams, Oregon Co.
 Ukiah, California
 Arcata, California
 Thompson Lumber Co., Montana
 Ukiah, California
 Bonners Ferry, Idaho
 Lyons, Oregon
 Trinidad, California
 Westfir, Oregon
 Ladew Timberland, Oregon
 Vaughn, Oregon
 Renton, Washington
 Sublimity, Oregon
 Eugene, Oregon
 Lebanon, Oregon
 Lucerne, Oregon
 Cannon, Calif.
 Roseburg, Oregon
 Libby, Montana
 Couville, Oregon
 Quail Creek Lumber Co.
 Oakland, Oregon
 Lewiston, Idaho
 Eugene, Oregon
 Sapho, Washington
 Falls of Solow, V. R.
 Clem, Washington
 Robinsonville, North Carolina
 Macdonald, Oregon
 Anderson, California
 Tillamook, Oregon
 Siam, Washington
 Fort Bragg, California
 Eugene, Oregon
 Urich, William
 Fort Bragg, California
 Alsea, Oregon
 Westside Lumber Co.
 Tacoma, Washington
 Enucnaw, Washington
 Dallas, Oregon
 Drain, Oregon

PIPELINE

Houston, Texas
 Salem, Illinois
 Williams, Oregon Co.
 San Francisco, California
 Dallas, Texas
 Washington, Pennsylvania
 Wichita Falls, Texas

NAME

Fulton, R. H.
 El Paso Natural Gas Co.
 Williams, Oregon Co. H. L.
 Mahoney Contracting Co.
 Midwestern Constructors
 Morrison Construction Co.
 Oklahoma Construction Co.
 Price Company, H. C.
 Sigafo Company, Texas
 Smith Contracting Co.
 Smith Contractor Corp.
 Texas-Louisiana M. K.

MISCELLANEOUS

NAME
 Alaska Road Commission
 Baltimore, City of
 Bethlehem Steel Co.
 Commonwealth Edison Co.
 Consumers Power Co.
 Dane County Highway Dept.
 DuPont, E. I. defenesters & Co., Inc.
 Duquesne Light Co.
 Neha Sugar Co., Ltd.
 One Star Steel Co.
 Niagara Mohawk Power Corp.
 North Indiana Public Service Co.
 Public Service Co. No. Illinois
 Sheboygan County Highway Dept.
 Tennessee Coal and Iron Co.
 Tennessee Valley Authority
 U. S. Atomic Energy Commission
 U. S. Engineer
 W. Virginia State Road Commission

Lubbock, Texas
 El Paso, Texas
 Jacksonville, Fla.
 Lansing, Michigan
 Tulsa, Oklahoma
 Dallas, Texas
 Bartlesville, Oklahoma
 Louisville, Kentucky
 Ft. Worth, Texas
 Allavista, Virginia
 Ft. Worth, Texas

Alaska
 Baltimore, Maryland
 Bethlehem & Steelton, Pa.
 Chicago, Illinois
 Jackson, Michigan
 Madison, Wisconsin
 Pittsburgh, Pennsylvania
 Neha, Kauri, T. H.
 Albany, New York
 Gary, Indiana
 Chicago, Illinois
 Sheboygan, Wisconsin
 Fairfield, Alabama
 Knoxville, Tennessee
 Oak Ridge, Tennessee
 Tulsa, Oklahoma
 Charleston, West Virginia

CANADIAN CONTRACTORS

NAME
 Iron Ore Company of Canada, Ltd.
 Bell Asbestos Corp.
 Fraser Brack Ltd.
 Shawinigan Power, Ltd.
 McFarland Construction Co.
 Ontario Hydro Electric Commission
 Peat Construction Ltd.
 Carter Construction Ltd.
 Wessco Coal Striping
 Sten Peterson
 Bird Construction Ltd.
 Morrison-Knudsen (Canada) Ltd.
 Alaska Pine Ltd.
 Steeprock Iron Mines Ltd.
 Aluminum Co. of Canada
 Celanese Corp. Ltd., of Canada

Montreal
 Asbestos, Quebec
 Montreal
 Montreal
 Picton, Ontario
 London, Ontario
 Brampton, Ontario
 Toronto, Ontario
 Montreal, Quebec
 Winnipeg, Manitoba
 Regina, Saskatchewan
 Vancouver, B. C.
 Steeprock, Ontario
 Montreal, Quebec

*The list of TD-24 fleet owners is growing every day, as is the vastly longer list of owners of single TD-24 tractors. For this reason the above list is not complete. If you're a TD-24 fleet owner whose name is missing, we'll catch you next time.



INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

INTERNATIONAL

POWER THAT PAYS

Aggregate Shortage— Problem for Counties

(Continued from preceding page)

aggregate surfacing in Clay County is a good example of road-mix methods of placing. Each mile called for 1,500 yards of gravel and from 420 to 600 cubic yards of soil binder, plus 14 tons of anhydrous calcium chloride. The price was \$2,376 per mile, excluding the cost of materials. The County furnished the calcium chloride and paid the royalty on the gravel and binder-soil deposits.

Disks, drags, and a pulverizing mixer worked the binder soil in the pit to prepare it for a 3/4-inch screening. Rains made the job doubly difficult. The processing of wet binder soil is a difficult and expensive problem which still lacks a satisfactory solution. However, vibration of the screen and application of an open flame on the under side helped to keep the openings clear. The gravel was crushed to pass a 3/4-inch screen and windrowed on the side of the road. Grader-blading and six passes by a pulverizing mixer blended the binder soil and gravel and 85 per cent of the calcium chloride required. Ten to twelve trips of a pneumatic-tire roller—with water added from a calibrated pressure tank to give 80 to 120 per cent Proctor moisture—insured adequate compaction. The remainder of the calcium chloride was placed on the finished road surface.

In Guthrie County, where the total road problems are more difficult than in the ordinary Iowa county, county forces road-mixed the materials for a stabilized wearing surface. They spread the windrowed mixture in three lifts and made a surface application of calcium chloride on each lift in an attempt to obtain a more uniform distribution of the material. The County reports that a very satisfactory surface has been produced at costs within budget possibilities.

Plant-Mix Methods

Two Iowa counties use a chemically treated surfacing material and plant-mix it. Montgomery County, for example, contracted a 7-mile project that called for two alternate materials. On one section, 4 miles in length, the aggregate was a Class A crushed stone; on the other a 50-50 combination of local pit-run gravel and limestone dust. Both sections required the addition of 8 pounds of anhydrous calcium chloride and 100 pounds of free water to 1,892 pounds of aggregate to produce one ton of finished mixture. The application was 1,400 tons per mile for both portions of the project.

The specifications required that all the materials be properly proportioned and uniformly mixed. In the case of the mixture using Class A crushed stone, the contractor calibrated the normal delivery of processed stone from the conveyor of the crushing plant against time. Knowing the time required to produce and deliver 1,892 pounds of stone over the loading belt, he added the calcium chloride and water at appropriate feed rates. The calcium chloride, in pellet form, was added to the stone through a hopper built on a platform straddling the conveyor belt. Adjusting the size of the opening at the bottom of the hopper assured a uniformly accurate supply of chemical on the stone as it passed underneath.

It was necessary to empty this hopper and clean and dry it whenever operations were delayed for any appreciable time. The contractor also obtained better results when he kept to a minimum the exposed surface of calcium chloride in the bin.

Two spraybars, each with four nozzles, added water to the material. One bar directed its spray on top of the material as it left the end of the conveyor belt; the other sprayed under-

neath. The delivery of water was regulated and calibrated. A set of metal fingers attached to the end of the conveyor served to diffuse the wetted material as it fell into the trucks.

In a similar manner the contractor plant-mixed pit-run gravel and limestone dust with calcium chloride and water. He required another bin and conveyor, though, to feed the limestone dust to the loading belt which delivered gravel from the processing plant.

On a 42-mile surfacing job in Pottawattamie County, the contractor proportioned the crushed stone, water, and calcium chloride on the conveyor belts and fed the mix into a pugmill.

Check samples taken in each of these counties showed that the finished mixtures were in substantial compliance with the respective design mixtures, except that the water content had a tendency to vary rather more than that specified in the contracts.

Both counties found it possible to spread the finished mixtures immedi-

(Concluded on next page)

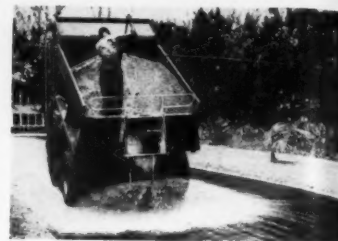


MODEL R HI-WAY SPREADER

Here is the Spreader that outperforms all others, as proved by actual field tests and on-the-job figures!

Use it for any type of aggregate from fine sand to crushed stone. It will spread forward or reverse, with control of material flow. By using baffles, you can control the width of the spread from one foot to the maximum. You'll be amazed at Model R's record of operational economy.

Sold by leading distributors throughout the U.S., Canada and many foreign countries



MODEL DD TAILGATE SPREADER

Here is the economical all-purpose, all-weather Spreader—used in the summer for dust control and for seal coating, and in the winter for spreading sand, cinders or rock salt on icy pavements.

Model DD fits any standard dump truck body and can be attached or detached in one minute. It gives a uniform spread 4 to 60 feet wide, at 1 to 35 miles per hour. Model DD will give you years of economical, trouble-free service.

HIGHWAY EQUIPMENT COMPANY, INC. CEDAR RAPIDS, IOWA, U.S.A.
MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

Why MARLOWs are the WORLD'S GREATEST Contractors' Pumps

When you own a new Marlow you can do things that are impossible with any other pump . . . because a Marlow is different in basic design and construction from any other pump. Its features combine to guarantee you the best and most efficient pumping service you have ever had.



ONLY A MARLOW HAS THESE FEATURES:

FASTEST AND HIGHEST	A Marlow primes faster and on higher suction lifts than any other self-priming centrifugal pump.
PUMPS MORE WATER	Will pump more water per gallon of fuel. Operates at easier engine speeds.
NON-CLOGGING	Self-cleaning construction enables a Marlow to handle dirtier water.
NEW MECHANICAL SEAL	Far more dependable and long-lived than any other contractor's pump seal.
SIMPLE AND STRONG	Requires practically no attention or maintenance.
LASTS INDEFINITELY	After long hard use, replace two inexpensive parts and pump is restored to full original efficiency.
LARGEST SELECTION	Models in all AGC ratings: 4 M through 240M, 1 1/2"-10"—plus many other models for special use.



MARLOW — EVERYWHERE

Sold and serviced by leading construction equipment distributors in 48 states and principal foreign countries. Backed by the Marlow organization — the largest of its kind.

MARLOW PUMPS

RIDGEWOOD, NEW JERSEY

Manufacturers of the World's Largest Line of Contractors' Pumps
Including the Famous Marlow Mud Hogs

"These new Marlows are the greatest pumps ever," says Mr. Harvey Reeves, above, pump expert of Foundation Equipment Corporation, Long Island City, New York.

ately. In Montgomery County the spreading operation was followed by rolling with a flat roller, while in Pottawattamie County the material was allowed to compact under traffic. The latter county acquired a used gasoline transport truck, equipped it with a spraybar, and in periods of dry weather sprinkles the surface of the road immediately in advance of the maintenance calcium-chloride application.

Whether or not the counties can maintain the surfaces in their present excellent condition, with uniform crown and high compaction, is a question that only the future can answer. Pottawattamie County has already contracted for 68 miles of chemically treated surfacing material to be applied this year. The addition of the 8 pounds of anhydrous calcium chloride increases the cost of surfacing materials by approximately 40 cents per ton, or \$560 per mile, but the counties feel it definitely well spent.

Surface Maintenance

In maintaining stabilized roadway surfaces, Iowa county engineers have found it important and necessary to hold the constructed crown so that surface water moves across the shoulders and into the ditches. Water standing on a roadway will eventually soak through the so-called waterproofed bases and impervious surface courses and may cause a soft spot which is difficult and expensive to correct. Some counties make a practice of obtaining and maintaining a proper crown on their roadways by using templates, both in construction and in maintenance operations. They report very good results.

There seems to be very general agreement that maintenance operations on stabilized surfaces should be confined to the periods when the surface is in a damp condition. Imperfections in the surface can then be corrected by judicious blading, although this operation requires both intelligence and experience on the part of the patrol operator. Attempts to blade the surface in dry weather are futile and likely to be ruinous.

Conclusion

Summarizing the developments in Iowa secondary-road soil stabilization, Mr. Clauson pointed out that different types of soil are likely to be encountered in each individual area. When the soil types have been identified, attempts should be made to use them efficiently and economically in construction. The problem does not lie in the standardization of materials or methods of construction; rather, it is one of adapting these materials and methods to local conditions. It is evident that such adaptation involves the study of many variables. Sampling and laboratory testing of the materials proposed for use in stabilized roads in Iowa is an important preliminary step. Design mixes for each project are set up on the basis of tests made in the Highway Commission Laboratory at Ames. The projects are then closely followed and samples are taken from the windrow before the mixtures are laid down and compacted. In general the check samples show substantial agreement between the design mix and the mix as delivered on the road.

Eutectic's Two New Offices

Two more regional sales offices, one in Los Angeles, Calif., and one in Buffalo, N. Y., are the latest item in the expansion program undertaken by Eutectic Welding Alloys Corp., Flushing, N. Y. Robert B. Welch supervises west-coast sales activities in Los Angeles, and Woodrow W. Shackelford heads the new sales regions for Buffalo and upstate New York. The two men bring the total of Eutectic's regional managers up to twenty. The com-

pany's field force comprises about 350 district engineers and distributors' representatives.

Pa. Says No More "Detours"

By order of E. L. Schmidt, Secretary of Highways, Pennsylvania Department of Highways, the word "detour" has been pensioned off, and will no longer appear on the state's highways. "Temporary Route" has taken its place.

Mr. Schmidt thinks that "detour"—"that much maligned word of French origin"—is no longer an adequate description of the situation. "In the early days", he said, "when motorists were compelled to take long and circuitous routes around construction projects, with much of the mileage over un-

paved routes, the word 'detour' was applicable. But now with hard-surfaced roads readily available, 'temporary route' is much more descriptive," as the signs are always removed as quickly as possible. Few of Pennsylvania's "temporary routes" will be over unsurfaced roads and they will seldom take motorists far off their course.

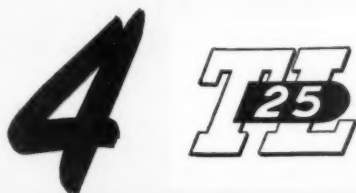
The former "Detour Bulletin", issued monthly during the winter season and each two weeks during the remainder of the year, has changed its title in accordance with Mr. Schmidt's ruling, and now appears as "Construction Bulletin". "Temporary Route" signs will replace the old "Detour" markings as rapidly as the changes can be made throughout the 41,000-mile state highway system.

Mobile Mixer for Patching

A bulletin on a mobile asphalt-mixing unit for road maintenance is available from Hetherington & Berner, Inc., 731 Kentucky Ave., Indianapolis 7, Ind. The Moto-Patcher consists of a 400-gallon bitumen tank, an aggregate hopper, and a mixing chamber.

The material is deposited on a pan for easy shoveling or can be dropped directly onto the road surface. The patcher is powered by a gasoline engine and its mixing capacity is 10 tons per hour. Front and rear connections are provided for hand spraying.

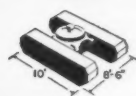
This literature may be obtained from the company by requesting Bulletin MP-51, or by using the Request Card at page 16. Circle No. 874.



CRAWLERS

for any
BOOM • TRAVEL
GROUND CONDITION

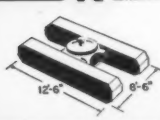
In the Lorain TL25 "Series" you can match the crawler to ground or working conditions or type of job for more profitable operation. Don't penalize your turntable by putting it on a crawler that limits its production. Pick the one suited to your needs in the Lorain TL25 "Series" . . . the only 3 1/2-yd. machine that offers you a selection of 4 crawlers. See your Thew-Lorain Distributor for facts.



STANDARD

TL25-J Crawler is suited for average job conditions—a good general purpose mounting for all booms. Length—10'0", width—8'6". All TL25 crawlers provide two travel speeds in both directions.

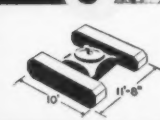
K



EXTRA-LONG

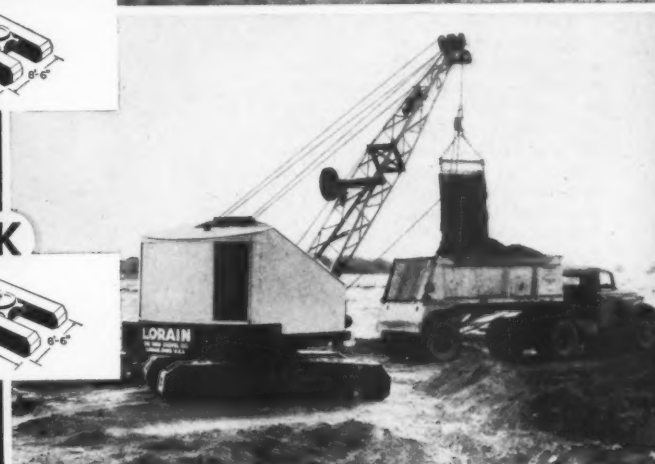
TL25-K Crawler is ideal for dragline, clamshell or crane use. 25% longer, it reduces ground pressures, improves soft-ground flotation, eliminates "nose-in". Length—12'6", width—8'6".

S



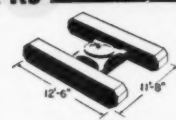
EXTRA-WIDE

TL25-S Crawler is the answer for trenching and pipeline needs. Wide distance between treads enables crawler to straddle trench without cave-ins. Especially adaptable to hoe front end. Length—10'0", width—11'8".

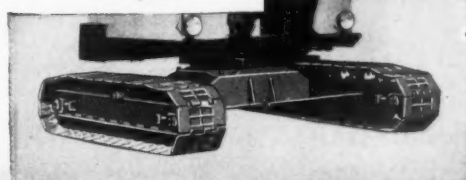


WIDER AND LONGER

KS



TL25-KS Crawler is 12'6" long—11'8" wide. Provides the surest kind of footing, even in the softest going. Provides greater crane lifting capacities . . . all the advantages of both the "K" and the "S" crawlers.



THE W LORAIN

THE THEW SHOVEL CO., LORAIN, OHIO

Don't Delay Repairs On Conveyor Belting

To get the maximum service life out of your conveyor belting, take particular care to repair all belt damage as soon as it is discovered. Belt fabric exposed to weather will absorb moisture if the protective cover becomes damaged, and may even become soaked. In warm weather, this condition leads to mildew and rot; in winter, ice crystals may gnaw at the fabric from within as the belt flexes. Thus, immediate repairs not only prevent the spread of damage, with its threat of premature failure, but also keep out the water which is the natural enemy of any conveyor belt.

The simple maintenance tools and procedures outlined here are those recommended by Newell Perry, Belting Engineer of Thermoid Co., 400 Whitehead Road, Trenton, N. J.

An adequate repair kit, he says, includes sharp cobbler's knives and a stone to keep them sharp; a supply of emery cloth, rubber cement, inner-tube patching rubber, rip plates, and standard belt fasteners and accessories, together with rags and gasoline for cleaning. As each belt is installed, remnants should be kept, because they will prove useful in subsequent repairs.

To mend long deep cuts which go through to the fabric, Perry recommends that you open the cut, clean out all dirt, and cement the cut closed, allowing the cement to dry thoroughly before restoring the belt to service. Where bits of torn cover leave exposed spots with only slight damage to the fabric, remove the loose ears of cover stock by carefully cutting a curved and bevel-edged area around the spot; then sand the edges, apply cement, allow it to dry, apply tire-patching rubber, and finally skive the patch flush with the belt cover.

Where gouges have penetrated the belt, or longitudinal rips have occurred, these points must be cleaned, sanded, cemented, and reinforced with rip plates at 3-inch intervals. Transverse rips require similar treatment with standard belt fasteners instead of rip plates. To repeat: use rip plates on longitudinal rips only, and standard fasteners on transverse rips only.

When holes in the belting do not permit the simple use of rip plates and fasteners, cut out the hole into the smallest possible rectangle with its sides parallel to and at right angles to the belt edges. Then, from belting remnants, cut an exact fit for the hole and insert the piece, fastening it with belt fasteners all around the patch. Cement all edges thoroughly. Where it is necessary to prevent seepage of fines through belt repairs, remove one ply of fabric from a belt remnant and place it under the fasteners and rip plates.

Vulcanized patches are superior to those described above, but require the addition to the kit of a portable vulcanizer, rubberized fabric, tie gum, cover stock, a one-ply knife and fabric pliers. In preparing a vulcanized patch, work down into the damaged belt as far as necessary by removing progressively smaller blocks of fabric with each successive ply. Clean, roughen, and cement the cavity, neatly fit in blocks of new fabric, and finally apply the uncured cover. Skive the edges of the patch flush, and vulcanize. Such patches cannot be made successfully unless the belt is dry, because the presence of moisture will permit the development of internal steam blisters. Only very large users of conveyor belting will find it necessary to vulcanize their own belt patches and splices.

Information on Guardrail

Information on a new type of reinforced-concrete guardrail is available from Hiway Security Guard Corp., Coon Rapids, Iowa. The booklet dia-

grams impact tests made by automobiles traveling up to 60 mph and at an angle of 42 degrees. It shows how the swept-back shape of the rail permitted contact with the tire below the hub cap and deflected the front wheels back into position.

The company says that over 250 such tests were made, in many of which the driver took both hands off the wheel.

The 6-foot curved rail sections weigh 310 pounds and are joined at each post by eye bolts to provide a strong and continuous deflector.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 883.

Bolts Support Tunnel Roof

Bolts for supporting roofs in mines and tunnels are discussed in a booklet prepared by Bethlehem Steel Co., Bethlehem, Pa. Pictures illustrate and text explains how the bolts are used to strengthen overlying strata by holding steel plates, ties, or channels tight against the roof.

The company points out that this method of support reduces the hazard of roof falls without obstructing space. The bolts are 30 to 96-inch steel rod with 5 inches of rolled thread at one end. Ties, channels, plates, nuts, wedges, and washers are used and can

be supplied as accessories.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 885.

Bacharach Adds Diesel Tools

Bacharach Industrial Instrument Co., Pittsburgh, Pa., recently purchased all inventories and production facilities of Curtiss & Smith Mfg. Co., Pottstown, Pa., thus expanding its line of specialized service instruments for the diesel industry. Initially, Bacharach will make all tools previously manufactured by Curtiss & Smith for servicing Cummins and GM diesels, as well as GM trucks.

only Allis-Chalmers offers you

History-Making

Thousands of Allis-Chalmers HD-5G 1-yd. front-end shovels are making history . . . handling an endless variety of excavating and material handling jobs faster, at lower cost than ever before.

Now . . . to meet the challenge of ever-increasing production demands, Allis-Chalmers multiplies the scope of tractor usefulness even more. And here's how.

The same basic design — the versatility that made the HD-5G useful can now be yours in 2-yd. and 4-yd. Tracto-Shovels. Compared with the unmatched performance of new Allis-Chalmers tractors, they offer a real competitive advantage in getting you a new, faster and better way of getting the job done.

A NEW ERA OF TRACTOR USEFULNESS

Pioneering New Methods — Tracto-Shovels are blazing new trails in excavating and material handling . . . doing traditional jobs in a new, better way.

A Size for Every Job — Faster, more efficient operation with lower equipment investment.

All-'Round Versatility — Not limited to a specific type of job. Quickly interchangeable attachments adapt Tracto-Shovels to different assignments in minutes. Simple truck or trailer transportation between jobs.

Built to Take It — These new Tracto-Shovels are the toughest ever built. Every part has ample size and strength for the job.

14 different attachments

Standard buckets, heavy-duty rock buckets, rock forks, bulldozer blades, light materials buckets (up to 7 cu. yd.) . . . plus other attachments for some models.

1 yd. HD-5G

40 Drawbar hp.
Dumping height (bucket hinge pin): 9 ft., ¼ in.
Total weight: 16,200 lb.

2 yd. HD-9G

72 Drawbar hp.
Dumping height (bucket hinge pin): 11 ft., 4 in.
Total weight: 29,900 lb.

3 yd. HD-15G

109 Drawbar hp.
Dumping height (bucket hinge pin): 12 ft., 8 in.
Total weight: 40,000 lb.

4 yd. HD-20G

Hydraulic power drive
175 net hp.
Dumping height (bucket hinge pin): 15 ft., 5 in.
Total weight: 55,000 lb.

High-Tensile-Strength Wire For Prestressed Concrete

High-tensile wire and reinforcing strand for prestressed concrete is discussed in a folder available from American Steel & Wire, Rockefeller Bldg., Cleveland 13, Ohio. It gives basic information on Super-Tens strand and wire, and illustrates a number of projects in which the products have been used.

In the hard-drawn uncoated state, Super-Tens is said to undergo a load relaxation due to creep of less than 6 per cent at stresses as high as 70 per cent of ultimate tensile strength. When

stress-relieved by a controlled time-temperature treatment, and when used below 55 per cent of its ultimate strength, it is said to show substantially no creep. Hard-drawn and galvanized, the wire is used where corrosive conditions may be encountered. The company recommends, however, that it be used at initial stresses below 60 per cent of ultimate strength.

The booklet includes stress-strain diagrams of Super-Tens wire and structural details of the strand. The ultimate tensile strength of the galvanized wire is 220,000 psi and of the uncoated wire, 238,000 to 268,000 psi.

This literature may be obtained from

the company, or by using the Request Card at page 16. Circle No. 877.

BPR 1950 Highway Statistics

"Highway Statistics, 1950" is the sixth in the Bureau of Public Roads' series presenting annual statistical and analytical tables of general interest concerning highways. A new departure is the inclusion in this bulletin of information on the financing of local streets. Other features of the bulletin are figures on motor-fuel consumption and revenue; motor-vehicle registration, revenue, and traffic characteristics; highway taxation and disposition

of receipts from it; highway finance, including state obligations and construction-contract awards; mileage of public streets and roads (built by state highway departments, state-administered, local-road mileage, and mileage summaries); and Federal-Aid expenditures and mileage.

"Highway Statistics, 1950" is for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 60 cents a copy. The former bulletins in the series are also available at the following prices: 1949, 55 cents; 1948, 65 cents; 1947, 45 cents; 1946, 50 cents; 1945, 35 cents; summary to 1945, 40 cents.



Advantages
NOW IN 3 NEW, BIGGER SIZES! *

World's Largest Front-End Shovel

— handles toughest excavating and materials handling jobs in a new, faster, better way. Standard bucket capacity — 4 yd.; light materials capacity — 7 yd.

the newest, finest line on Earth!

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Scrapers Released For Commercial Use

Commercial models of the 2C500 Heiliner are now available, according to the Road Machinery Division of The Heil Co., 300 W. Montana Ave., Milwaukee 1, Wis. During the past year the units have been built exclusively for the Corps of Engineers, U. S. Army.

The 2C500 is equipped with a 13-cubic-yard scraper. Features include Heil's Hydro-Steer, unobstructed visibility, and heavy-duty 2-shoe air brakes synchronized on both the tractor and the trailing-unit wheels. A 165-hp Model HRB600 Cummins diesel engine drives the 500 Heiliner at speeds up to 25 mph.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 917.

Book on Steel Company

In celebration of one-third of a century of service, Carolina Steel & Iron



The 2C500 Heiliner is once more available to commercial users. For the past year it has been built exclusively for the Corps of Engineers.

Co., Greensboro, N. C., has issued a book depicting various phases of its operation. The book points up the part the company has played in the recent

change from an agricultural to an industrial economy in the south.

After touching on history, the book swings into a section on equipment and facilities. Large pictures show shops and equipment of both Carolina and Salem Steel, including saws, punches, facers, planers, shears, and brakes. Facilities pictured include storage, template-shop, and engineering.

The first job section features

churches, schools, and hospitals for which the company has furnished steel. Next comes a section on grandstands, gymnasiums, and bridges; one on commercial and industrial buildings; one on tanks, vats, and custom-plate work; and one on defense fabrication.

The book contains 76 pages, has a red cover stamped in gold, and measures 9 x 12 inches. It is available in limited supply from the company, or it can be secured by using the Request Card at page 16. Circle No. 876.

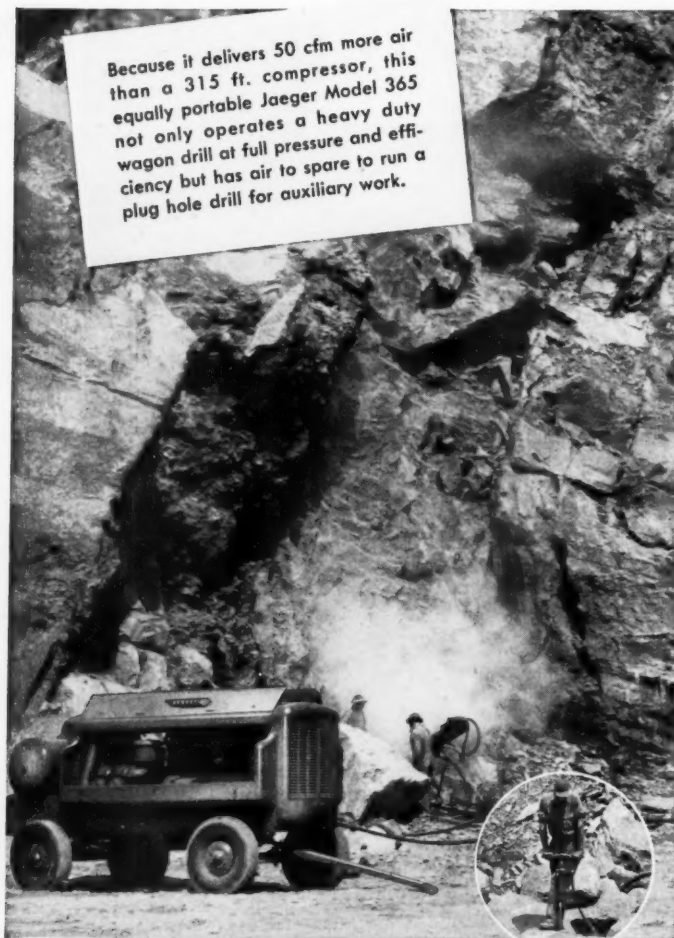
Bulletin on Arc Welding A Steel Highway Bridge

A 32-page bulletin offers a complete study of the structural arc welding of a modern steel deck-girder highway bridge. It is issued by Lincoln Electric Co., P. O. Box 5758, Cleveland 17, Ohio, and was written by Ned L. Ashton, a consulting engineer from Iowa City, Iowa.

The bulletin includes photos of erection procedures on the 5-span two-lane bridge, sketches of welded connections, and moment and influence line diagrams. Complete costs are also listed.

The price of the bulletin is 25 cents and it can be purchased from the company.

Jaeger "air plus" means 15% to 25% more air from portable compressors



As compact and portable as compressors of much less capacity, Jaeger Air Plus units produce, at the rock face, the air you need to operate your drills at full efficiency. Model 250 fully powers 2 heavy rock drills. Model 365 fully powers 3 heavy rock drills or one heavy wagon drill plus a plug hole drill. Model 600, introduced by Jaeger, was the first to run 2 heavy wagon drills efficiently. For increased production with low cost air power, see your Jaeger distributor or send for Catalog JC-1.

THE JAEGER MACHINE COMPANY

701 Dublin Ave., Columbus 16, Ohio

PUMPS • MIXERS • AGGREGATE SPREADERS • CONCRETE SPREADERS, FINISHERS

Year-around All-Weather Patching Now Possible with McCONNAUGHAY HOT (UP TO 300°F) OR COLD "MULTI-PUG" ASPHALT MIXER



DEALERS: WRITE US FOR EXCLUSIVE TERRITORY AND PERSONAL DEMONSTRATION
CABLE: McCONN

K. E. McCONNAUGHAY • LAFAYETTE, IND.—U.S.A.

The Patching
Mixer
for Summer
or Winter

The best way to keep repair costs down is to repair the breaks when they first appear.

MODEL
HTD



You'll find it so easy to wheel heavy loads in Sterling Barrows. Only a minimum of effort is required. Sterling's perfectly balanced construction permits 80% of the load to be carried on the wheel... only 20% by the operator. This increases efficiency... allows more loads to be hauled each day... reduces hauling costs.

ORDER NOW!

Sterlings are worth waiting for. While materials are still short, we'll make every effort to ship as quickly as possible.

Equipped with steel wheel or wheel with zero pressure or pneumatic tire.



Model C5W with Pneumatic Tired Wheel and Wood Frame.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBARROWS



Look for this Mark of
STERLING Quality

A 6026-1/3

Ample Site Permits Single-Level School

Horizontal Rather Than Vertical Construction Is Big Feature;
Masonry Structure Accommodates 750 Pupils

THE new Regional High School for District 4, Middlesex County, Conn., can hold its own with any similar type of building in the country for modern design and construction, as well as choice of location. The ample 50-acre site on Kelsey Hill Road, just off State Route 80 near Deep River, permitted building on a single level in preference to the multistory and costlier construction that is common in more congested areas. Divided into several wings of various shapes and sizes, the building has an over-all length of 323 feet east and west x 252 feet north and south. Off the southeast corner is a separate wing for an auditorium seating 680; it is 83 feet long x 34 feet wide at the stage and 74 feet wide at the rear.

Built to accommodate 750 pupils, with room for future expansion, the Regional High School is centrally located to the three towns—Chester, Deep River, and Essex—which it serves. It will replace inadequate quarters which have been housing three town schools.

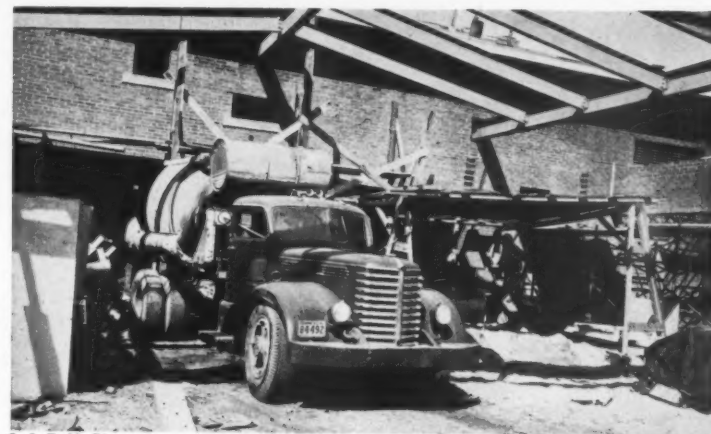
Architect Ernest Sibley of West Hartford, Conn., designed the \$1,500,000 school and its construction contract was awarded to The Associated Construction Co., general contractor and builder of Hartford, Conn. Some work got under way at the site in December, 1950, but because of the unfavorable winter weather the project did not really get started until spring. Progress has been steady since then, and the building is scheduled for completion by this summer.

Considerable Grading

The site is on a hilltop, assuring good drainage, and is surrounded by gently rolling countryside. Part of the area was once an apple orchard, and the soil is a hardpan that furnishes a good foundation. To the west the terrain drops off sharply, so there is as much as a 140-foot difference in elevation be-

tween the ground at the school and the extreme western edge of the property. Considerable grading was necessary to level the ground for parking and play areas east, north, and west of the school itself.

Excavation totaled 100,000 cubic yards, and it all went for fill with not a yard of material wasted. The Deep River Construction Co. of Deep River, Conn., handled the earthwork under a subcontract, using a pair of Bucyrus-Erie ¾-yard shovels, two tractor-dozers, and a fleet of dump trucks. In

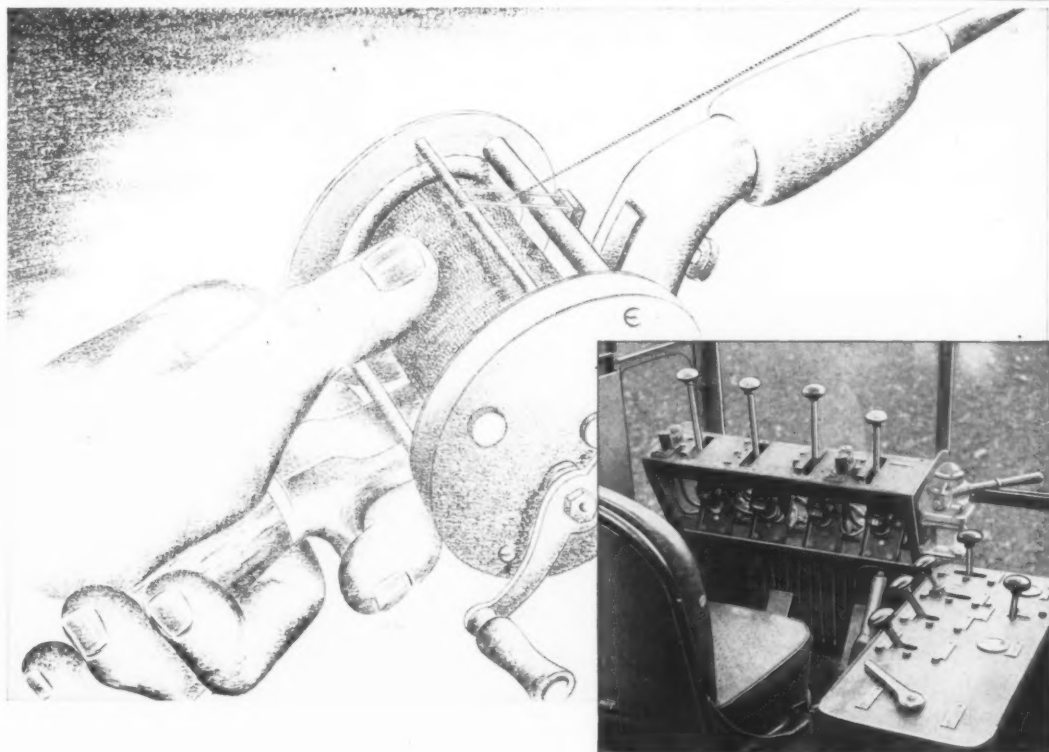


C. & E. M. Photo

Outside the gymnasium of Connecticut's District 4 Regional High School a Rex Moto-Mixer on a Diamond T truck brings transit-mix concrete for a floor-slab pour.

general, dirt was excavated at the north and east portions of the site for use as fill at the west end.

East of the school and adjoining the auditorium is a paved parking field. (Continued on next page)



Complete Command of Operations... *Right under your thumb*

With LIMA precision air controlled clutches and brakes you get the same smooth, easy, responsive control of the hoist and drag lines that you do when you apply the under-the-thumb tension to the line on a fisherman's reel.

There are other advantages, too. LIMA precision air control promotes long life of the machine and uniformity to the operating cycle. It also automatically compensates the adjustments of the clutches for wear of lining and to meet weather and operating conditions.

Last (but by no means least), there's no mid-afternoon slowdown because of operator fatigue. Both man and machine can work at peak level for the entire shift.

BALDWIN-LIMA-HAMILTON CORPORATION
LIMA-HAMILTON DIVISION
LIMA, OHIO

OFFICES IN PRINCIPAL CITIES OF THE WORLD

BALDWIN-LIMA-HAMILTON
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS • TRUCK CRANES

What's
the
capacity
of this
block?



If you don't know...
don't use it!



Specify
AMERICAN CROSBY
Load-Rated!
BLOCKS

Safe working capacity
embossed on side plate
DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA



LIMA SHOVELS are available in capacities from ¾ to 6 yards.

LIMA CRANES are available in sizes to 110 tons capacity.

LIMA DRAGLINES are available in variable capacities to suit specific needs.

Wheel or truck mounting is available on machines of ¾ and 1½ yards capacity.



Ample Site Permits Single-Level School

(Continued from preceding page)

240 x 235 feet. To the north there are two soft-ball fields, a baseball diamond, and a paved parking and play area measuring 325 x 150 feet. Off to the west, and 35 feet lower than the grade at the building, is the football field, 360 x 160 feet, encircled by a ¼-mile cinder track. Bleachers are built into the slope along the east side, and there are parking fields east and west of the gridiron. North of the athletic field is a large grass play area, 405 x 175 feet.

Sewage from the school drains off into an 18,000-gallon septic tank and dosing chamber just west of the building. This concrete structure, 30 x 10 x 9 feet deep at the center, filters through four diversion outlets into a leaching basin at the bottom of the 30-foot fill on which the athletic field is laid out. Water supply comes from a well driven to a depth of 480 feet and having a capacity in excess of 550 gpm. An underground water-storage tank holds 12,000 gallons.

Foundation

Since the building is on one level, with the exception of the boiler room which goes 10 feet down into the ground, concrete footings under the walls sufficed for the foundation. The soil itself was so hard that even a pick made little impression. Footings are 2 feet wide x 1 foot deep, and they support reinforced-concrete foundation walls varying in height from 4½ to 7 feet. Most of these walls are 12 inches thick, except for the gymnasium and auditorium portions where 16-inch walls were called for. The walls are stepped in on the outside face 8 inches below the finished grade, and the brickwork begins at this point. Thus no concrete can be seen in the elevations at ground level.

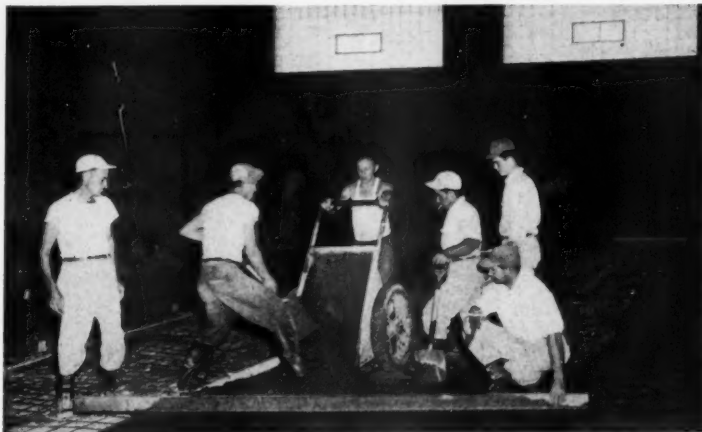
Although there is no basement, there is about ¼ mile of tunnel under the building to accommodate the heating and ventilating systems and the various utilities. In general, they are laid out around the perimeter of the structure, and vary in width from 5 to 12 feet and in height from 3 to 7 feet. Their generous dimensions were designed with future expansion in mind. Foundation walls were usually poured in wooden forms, while Economy steel forms were used for the tunnel work. Where inside tunnel walls took no load, concrete block was permitted in their construction.

Concrete for the project was delivered to the site by the Doyle Concrete Co. in transit-mix trucks from its Westbrook plant 8 miles away. Usually a fleet of four Rex 4 or 5-yard Moto-Mixers on Diamond T trucks supplied the job needs. Footing concrete was designed for a strength of 2,000 psi at 28 days, while the walls and slabs contain 2,500-psi concrete.

Walls and Slabs

Concrete slabs laid on the grade are 4 inches thick, and reinforced at mid-depth with 6 x 6-inch mesh of No. 4 wire. Other slabs, either suspended or laid over the tunnels, are 6 inches in depth and reinforced. In the gymnasium, 80 feet wide x 102 feet long, the 4-inch floor slab was laid on the grade in 8-foot lanes. The concrete was distributed in Jackson rubber-tired buggies and leveled off with a wooden screed. Joist clips were embedded in the surface of the slab, and when the concrete had hardened, 2 x 3's were nailed to the clips. A 1½-inch maple floor was laid over these sleepers and leveled up with slate shims to give it some spring.

Across the front end of the gymnasium on a mezzanine level there is a fan room 24 feet wide that required a 6-inch floor of structural concrete.



C. & E. M. Photo

Jackson rubber-tired buggies dump the concrete for the 4-inch mesh-reinforced gym floor, laid in 8-foot lanes.

Wooden forms for this slab were supported on Acrow shores, and the concrete was lifted in a bottom-dump

bucket handled by a P&H truck crane. Concrete on the project totaled about 3,200 cubic yards, and all wooden forms

were built on the job with the help of a DeWalt 12-inch table saw, together with a Skilsaw and Black & Decker portable saws.

Masonry walls are chiefly 12 inches thick—4-inch red common face brick backed by 8-inch cinder block—except in the gymnasium, auditorium, and cafeteria where they are of solid brick, 16 inches thick, in order to support structural members. The Pola Brick Co. of East Windsor Hill, Conn., supplied the 1,100,000 red bricks required, while the 50,000 cinder blocks came from Hartford Concrete Units, Hartford, Conn. The general contractor handled the masonry himself with equipment that included Waco scaffolds, 2 Clipper saws, and 3 mortar mixers—2 Jaegers and a Ransome.

Big Chimney

A king-size chimney, 6 x 17 feet in section and reaching 63 feet above the boiler-room floor, accounted for a good number of bricks. Two hoists were set

(Continued on next page)

Get all the facts on

"KOEHRING
WORK
CAPACITY"

**Up to 79½ TONS
LIFT CAPACITY**

up to 2½ yards
dipper capacity



C. & E. M. Photos

Five welded steel trusses are supported on the gym's masonry bearing walls. Here a workman welds bar joists to an I-beam.



Here a built-up flat roof of a school building gets a 1/4-inch cement finish on top of Porete precast lightweight concrete roof plank.

up to deliver the materials to the bricklayers on the scaffolding. The chimney houses flues for the furnace, incinerator, and exhaust ducts from the

classroom shops. The building is heated by steam from two Pacific oil-burning furnaces, with No. 6 oil supplied from a 10,000-gallon tank located outside

the school. The oil is preheated by steam coils and an electric booster. A smaller 2,000-gallon tank supplies No. 2 oil for a Domestic heater which sup-

plies hot water when the boilers are not running and preheats oil to start the larger boilers.

For the interior finish on outside walls, furring is placed against the cinder block, followed by metal lath and plaster. On interior walls the plaster is laid directly on the cinder blocks. Most of the ceilings consist of acoustical tile on 1 x 3 furring, but acoustical plaster is used in special locations such as the music rooms and library. The latter room is circular in shape with a 45-foot diameter.

Classroom wings are 22 feet 3 inches in width and have parallel corridors 12 feet wide; the length of the wings is divided so that the individual rooms are generally either 32 feet or 28 feet 6 inches x 22 feet 3 inches. An asphalt-tile floor is laid over the concrete slabs. The two main entrances are on the south side, off Kelsey Hill Road. This elevation also has an outdoor terrace off the cafeteria. From the west side there are two exits and steps leading down to the athletic field. Total floor area in the building is approximately 83,000 square feet.

Steelwork

Supported on the masonry bearing walls of the gymnasium are five welded steel trusses, 82 feet 8 inches long, equally spaced over the 102-foot length. From the finished-floor elevation of 277 there is a 27-foot clearance to the bottom of the trusses. Steel bar joists were laid across the bottom chords, and channel furring was wired to the bottom of the joists. The 3/4-inch furring on 16-inch centers provides support for 3/8-inch gypsum board. An acoustical tile ceiling, in 2-foot squares, was screwed to the gypsum boards.

Across the other roof spans, steel bar joists were laid out on an average spacing of 24 inches. They were supported either directly on the masonry or on steel beams resting on the walls. Joists were usually 8 inches in depth for the shorter spans in rooms and corridors, or 12 inches for some of the longer spans. Truscon bar joists were supplied and erected respectively by the Fox Steel Co. and the Miller Steel Erection Co., both of New Haven. The Standard Structural Steel Co. of Hartford furnished structural steel and miscellaneous iron.

The steel items totaled 250 tons, and the erection was handled by a truck crane. Bar joists were welded to I-beams when they were not laid directly on the masonry walls.

Assorted Roofs

Roofing material for the gymnasium, auditorium, and boiler room consists of Porete precast lightweight concrete roof plank. Planks are 2 feet wide x 2 3/4 inches thick, with tongue-and-groove edging for a tight fit, and are reinforced with galvanized-steel fabric. The joints are sealed with asphalt. Over the flat surfaces of the auditorium and boiler-room roof the planks are cov-

(Concluded on next page)

50 to 125 CU. YD. Johnson Roadbuilders Bins

Flexible All-Welded Roadbuilders Bin gives you a portable batch plant for 2, 3 or 4 aggregates, or converts to transit-mix (shown) or central-mix plant for bulk cement and 2 or 3 aggregates. Can be equipped with 1 or 2 multiple material Hi-Speed Batchers, size 34 Roadbuilders Batchers, or truck-mixer charging batcher in 2, 3 or 4-yd. sizes. Bin available with 2, 3 or 4 compartments, 50 to 125 cu. yds. Also: silos, elevators, buckets.

C. S. JOHNSON (Koehring Subsidiary)
Champaign, Illinois



10, 14-CU. FT. Kwik-Mix Bituminous Mixers

With Kwik-Mix non-tilting 10 and 14 cu. ft. Bituminous Mixers you get: wide flow-line skip, hinged skip track, pug-mill-type mixing, accurate heat control, even bitumen distribution, 6-second end discharge. Both sizes can be used with Tower Loader (shown) for stockpiling or loading trucks. Also available on skids as stationary plants. Other units: concrete; tilt, non-tilt plaster-mortar mixers; and Moto-Bug® (power wheelbarrow).

KWIK-MIX (Koehring Subsidiary)
Port Washington, Wis.



18 1/2 FT.-PER-MIN. Parsons 202 Trenchliner

On utility, drainage and irrigation trenching, you can dig up to 18 1/2 ft. per min., 13 to 31 in. wide, in depths to 6 ft. with this 202 wheel-type Trenchliner. It has: square or round-bottom buckets; quick-change bucket fronts with cutting lips or "Tap-In" teeth; 16 or 20-in. crawler shoes; gas or diesel engine. Tile box and chute optional. Also check 215 wheel-type; 3 big ladder-types, full crawler mounted; utility Trenchliner on rubber.

PARSONS (Koehring Subsidiary)
Newton, Iowa



X70

IF you are interested in getting the highest profit-earning value in excavators and cranes . . . it will pay you to measure by "KOEHRING WORK CAPACITY".

Your Koehring distributor has specific figures and facts that will let you prove for yourself the biggest profit advantage. See him soon.



KOEHRING
MILWAUKEE 18, WIS.

Ample Site Permits Single-Level School

(Continued from preceding page)

ered with Barrett 5-ply roofing material. On the pitched surface of the hip-type gymnasium roof, rafters were laid and then covered with Ruberoid Thick Butt 310-pound asphalt shingles.

For the other roofs, precast Porex slabs were laid over the bar joists. The slabs are 1¾ inches thick, 8 feet long, and came in widths of 24 and 32 inches. They consist of chemically mineralized wood fiber bound under pressure with portland cement, and weigh about 4 pounds to the square foot. After the Porex was laid, the entire surface was covered with a sand-cement mortar finish, ¼ inch thick. Flat areas were then topped with built-up roofing material. Over areas where an insulating air space was required, a pitched wooden framework was built over the mortar-covered Porex, and a roof of Ruberoid Thick Butt shingles was nailed to the rafters.

Personnel

The Associated Construction Co., with its subcontractors, employed an average force of 100 on the school project under the direction of Carl B. Benson, Superintendent. Regional High School District 4 was represented on the construction by James Hanson, Clerk of the Works.

Associated with the architect on this work is Hill & Harrigan, mechanical engineer of New Haven, Conn.; and Robert W. Loomis, structural engineer, took up the work started by Severud-Elstad-Krueger of New York.

The landscape work was designed by Charles A. Currier & Associates of West Hartford and awarded to Associated Construction Co. under a separate contract. Sewage disposal included in landscape work was designed by Hill & Harrigan.

Trailmobile Advances Two

Paul W. Heasley and Lloyd R. Everhard have moved up into two top management positions in Trailmobile, Inc., Cincinnati, Ohio, a subsidiary of Pullman, Inc. Mr. Heasley, formerly Comptroller, is now Vice President and Comptroller; and Mr. Everhard advances from Secretary to Secretary-Treasurer. Mr. Heasley joined Trailmobile in 1949 and Mr. Everhard in 1941.



C. & E. M. Photo

Superintendent Carl B. Benson (center) poses with James Hanson (right), Clerk of the Works, and Bricklayer Foreman Frank Baldi on the school job in Connecticut.

Estimating Production Of Material-Moving Units

"Estimating Production and Costs of Material Movement with Euclids" is the title of an enlarged book just issued by The Euclid Road Machinery Co., 1361 Chardon Road, Cleveland 17, Ohio. Although intended for making estimates on Euclid equipment, the formulas and methods can be applied to other makes.

Part No. 1 covers job analysis, loading, hauling and returning, turning and dumping, and spotting. It gives details on payload cycles, outputs, grade and rolling resistance, and power factors.

Part No. 2 on cost estimating includes information on depreciation, taxes, repairs, wages, and work sheets. Formulas for determining grade ability, rim pull, and engine torque are given in Part No. 3. The booklet also includes tables on weights and measures, conversions, and materials.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 949.



**"We didn't know a paver
could be made this good!"**

*Says John B. Taylor, Paving Contractor,
about the new Worthington Paver*

"SELDOM DO WE ENDORSE ANY CONSTRUCTION EQUIPMENT" begins a letter from John B. Taylor, Taylor Brothers president, pictured here on the job, "... but after using the new 34E ... we feel it our responsibility to write you."

According to its president, John B. Taylor, Taylor Brothers Company, Inc., paving contractors from Birmingham, Michigan, have found that the new Worthington Model WP paver will lay more highway faster and at lower cost than any paver his company knows of.

Says Mr. Taylor: "We thought we knew about your pavers' superiority after using them for 20 years, but this new 34E beats them all."

The Taylor Company has been using its Wor-

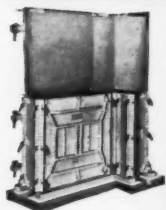
thington Dual Drum Paver on a paving job near Dearborn.

The new Worthington paver is the practical result of forty years of experience in building pavers and other construction equipment. Learn how it can help speed your paving jobs by writing for Bulletin R-1700-B7 to Worthington Corporation, formerly Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, New Jersey.



NEW WORTHINGTON DUAL-DRUM PAVES 34E work for Taylor Brothers on a paving job near Dearborn, Michigan. Taylor's job reports indicate that the new paver, with its six-and-a-half-second ship, faster transfer and discharge automatic water control system, and hydraulically controlled bucket, is laying more highways and streets at less cost.

Save manpower time and material



When placing concrete, use this nationwide Form Rental and Engineering Service to increase profits, reduce costs.

Standard units of Economy Forms fit most jobs. But where needed, special forms can be built to specification.

- Foundations and Walls
- Water or Sewage Treatment Plants
- Tanks — Circular and Rectangular
- Bridges, Culverts and Box Tunnels

ECONOMY FORMS CORP.
Home Office: Des Moines, Ia.

**ECONOMY
FORMS**

metal forms for
concrete construction

District Sales Offices:
Kansas City, Mo.
Omaha, Neb.
Minneapolis, Minn.
Fort Wayne, Ind.
Cincinnati, Ohio
Pittsburgh, Pa.
Springfield, Mass.
Metuchen, N. J.
Decatur, Ga.
Dallas, Texas
Los Angeles, Calif.
Oakland, Calif.
Denver, Colo.



If It's A Construction Job, It's A **BLUE BRUTE** Job

WORTHINGTON
Construction Equipment

Automatic Trainers Align Creeping Belt

A belt trainer that automatically keeps wandering conveyor belts aligned is now being manufactured by The Rapids-Standard Co., Inc., Rapistan Bldg., Grand Rapids 2, Mich. It can be installed on any make of conveyor which has the return belt exposed beneath the bed. Designed for use on fabric or rubber-covered belts 3/16 inch or more thick, the trainer operates at speeds up to 200 feet per minute. It does not interfere with normal conveyor operation, and does not mark or wear the belt in any way, the company claims.

The trainer is bolted to the flanged rails on the underside of the conveyor. Flat sides of the belt run between two sets of knurled spring-loaded rollers, with the belt edges contacting two sets of equalizer posts. If the belt creeps to either side it presses against these equalizer posts and cocks the spring-loaded knurled rolls to the new belt direction. This forces the belt immediately back into alignment, and the trainer mechanism returns to normal setting ready for the next belt movement.

The trainer can be ordered with Rapistan Table-Veyors or Power-Veyors at time of manufacture, or can be installed on these and other makes of conveyor now in service.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 898.

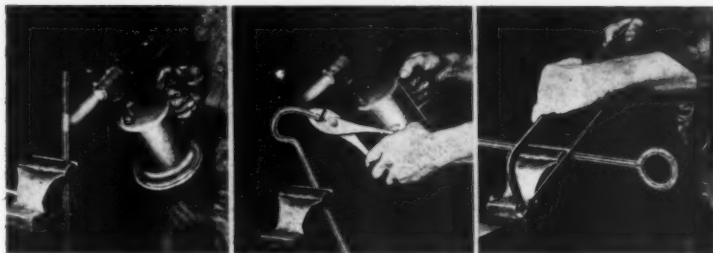
A Telescopic Tower

A telescopic tower for heights above 30 feet is announced by Atlas Industrial Corp., 849 39th St., Brooklyn, N. Y. The Hi-Lift starts as a 6-foot tower and extends to its full height in less than 5 minutes. Electrically operated, it is easily handled through door and elevator openings. It is equipped with roller-bearing swivel casters on all four legs for easy maneuvering in tight places, and has outriggers for extra stability. Operated by one man, the tower may be partially extended to any desired height, and can be used for cleaning and maintenance in high out-of-reach places.

Further information may be secured from the company. Or use the Request Card bound in at page 16. Circle No. 924.



The Hi-Lift telescopic tower for cleaning and maintenance work starts as a 6-foot tower and extends 30 feet.



Three steps in making an eye-bolt from Redi-Bolt threaded steel rod; heating the rod with a blowtorch to soften it; bending the heated rod with pliers to desired shape; hacksawing the eye-bolt to length.

Threaded Steel Rod

A threaded steel rod for repair and support work has been put on the mar-

ket by Redi-Bolt, P. O. Box 6102, Chicago, Ill. The Redi-Bolt comes in straight 36-inch lengths and 6 diameters from 1/4 to 3/4 inch. It is made

of cold-drawn steel and is protected from rust with a special coating.

The threaded rod can be made into long straight bolts or, after heating with a blowtorch, can be bent into U-bolts, L-bolts, eye-bolts, and similar shapes. No threading is necessary.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 938.

Fulton Mills' New Plant

Fulton Bag & Cotton Mills, Atlanta, Ga., manufacturer of tarpaulins and other cotton products, has opened a new manufacturing plant at the Village of Crystal, Minn. August Denk is Manager, Gene DuBois is Sales Manager, and Jack C. Baker is Superintendent.



Here's your NEW LaPLANT-CHOATE ROCK WAGON

HERE'S a new addition to the well-known LaPlant-Choate line of Motor Wagons and Earthmovers. The 18-ton TR 200 is a hydraulically-controlled rear dump wagon flexibly joined to the same big rubber-tired tractor so successfully used on the LaPlant-Choate TS 200 Motor Scraper. It combines rugged power, big capacity and high speed with a host of other features to make this unit outstanding in its field.

FEATURES YOU'VE BEEN LOOKING FOR IN A REAR DUMP WAGON

Stable wheel base assures absolute safety when dumping over edge.

Rock Lug tires.

Protected cab.

Your choice of two diesel engines in the T 200 Tractor... a 176 HP Buda or a 165 HP Cummins.

No obstructions in the wagon body. Tilts to 70° from horizontal.

Full hydraulic control.

Rear dump advantages.

Available with heated body for use in cold climate to prevent freezing of material in load.

GENERAL

CAPACITY	
Struck, cu. yds.	11
Heaped, cu. yds.	13
Tons	18
OVERALL DIMENSIONS	
Length	25'9"
Width	10'7"
Height	10'0"
WHEEL BASE	13'7"
WHEEL TREAD	
Tractor	6'8"
Wagon	8'8"
TIRES	4-21.00 x 25-24 ply rock lug
BRAKES	
4-wheel air Timken-Detroit	18" x 7"
TURNING	
Width required 180° turn	31'3"
Degree of turn each way	.60°
HYDRAULIC SYSTEM	LPC Fluid Power Unit
Steering	25 GPM. Model HU25
Wagon operation	40 GPM. Model HU40
SHIPPING WEIGHT	
(Approx. in lbs.)	40,000

T 200 TRACTOR

ENGINE	
Buda Diesel Model 6-DA-779	176 HP
or	
Cummins Diesel Model HRB-600	165 HP
ENGINE CLUTCH	17" Lipe Railway
TRANSMISSION	Fuller 5A1120
SPEEDS	
(at 1800 RPM—MPH)	From 2.46 to 21.63
STARTING METHOD	Electric 24 V
AIR COMPRESSOR	Bendix-Westinghouse 7 1/4 cu. ft. capacity
ELECTRIC SYSTEM	12 V
FUEL TANK CAPACITY	U. S. gallons 70

R 200 WAGON

MISCELLANEOUS DIMENSIONS	
Loading height, rear	5'6"
Loading height, side	8'3"
Bowl width	8'0"
Bowl depth, maximum	4'8"
Bowl length	11'3"
OPERATING METHOD	
Type of ejection	Rear dump, hyd. lift
Number of jacks (double acting)	2
Size of jacks	8" x 31"
DUMPING ANGLE	70°

LAPLANT
MANUFACTURING CO., INC.



CHOATE
CEDAR RAPIDS, IOWA, U. S. A.



Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.



2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



Hydraulic and Cable-operated Dozers.

Helical-Wire Inserts Repair Worn Threads

Stainless-steel helical-wire inserts for repairing stripped or worn threads are made by Heli-Coil Corp., 1184 Shelter Rock Lane, Danbury, Conn. After the worn thread is cleaned out and retapped, a Heli-Coil insert is placed with a special tool. The company claims that the reconditioned hole has higher loading strength and greater resistance to wear and corrosion than the original tapped hole.

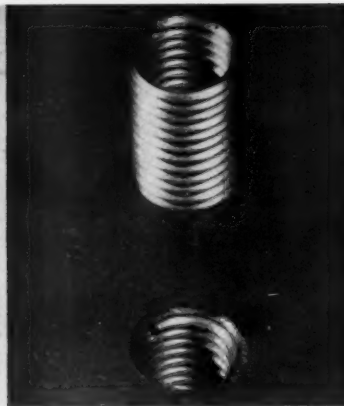
Inserts are available in the following standard thread classifications: 4-40 to 1½-6 sizes in the National and Unified Coarse thread series; 6-40 to 1½-12 in the National and Unified Fine thread series; 10-1.0 mm to ¾-18 in the automotive spark-plug series; 14-1.25 mm to 18-1.5 mm in the aviation spark-plug series; and ¾-27 to 1-11½ in the pipe-thread series. These inserts are supplied in 1, 1½, and 2-diameter lengths. For special applications, non-



A Heli-Coil thread insert is installed, with a special tool, to repair the worn threads in a hole. The reconditioned hole is said to have higher loading strength and greater resistance to wear and corrosion than the original hole.

standard threads and sizes can also be supplied.

Because they are slightly larger than



the hole into which they are installed, these thread inserts are self-locking. No amount of vibration or bolt tightening will loosen them, the company

claims. However, they can be removed with a special tool if this should become necessary.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 999.

Data on Self-Feeding Loader

A self-feeding bucket-type loader with three optional feeding mechanisms is described in a catalog prepared by Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill. The PMCO Speedloader with Dragger-Back, bucket-type, or Cross-Breed feeders has a choice of drives for hard-surface or off-highway use.

The Dragger-Back feeder is used for loading loose windrows. For stockpile loading, digging, or leveling, the bucket type is recommended. The Cross-Breed model loads material that has not been windrowed.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 871.

Drill
holes
as
deep
as

200 ft.



... 16" to 84" in diameter

Speed up digging operations with truck-mounted Calweld Earth Drills. Equipped with bucket-type drills, they remove the earth as they dig... save time in boring caisson pier holes, pre-boring concrete piles, digging belled footings or testing soil conditions. Interchangeable bucket-drills permit boring in every soil condition.

Calweld Earth Drills are faster because they perform every action mechanically. All controls are centered in a single unit for easy, one-man operation. Built on a skid frame for simple mounting on any truck 2-tons or larger. Three models.

Write today for complete information.

California Welding &
Blacksmith Shop, Inc.
7222 E. Slauson Ave.
Los Angeles 22, Calif.
EXPORT OFFICE:
50 Church St., New York 7, N. Y.



CALWELD EARTH DRILLS

Four Major Facts about C&E Monthly

1. It carries more editorial material than any other monthly publication in the field.
2. It also carries a higher proportion of editorial to advertising content.
3. C&E Monthly carries more display advertisers than any other monthly, and,
4. More exclusive advertisers.

This leadership pays off in readership and produces inquiries and orders for advertisers. It helps explain why **CONTRACTORS AND ENGINEERS MONTHLY** carries more advertisers, and more exclusive advertisers than any other monthly in the construction market.

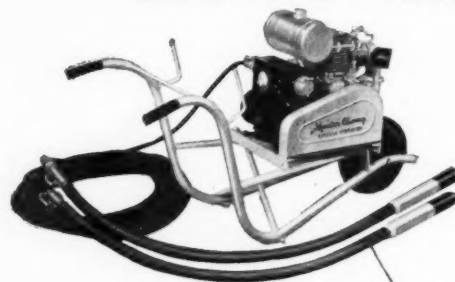
A 2-line inquiry will bring you the facts you want about the huge construction market.

CONTRACTORS AND ENGINEERS MONTHLY

the **NEWS**paper of highway and heavy construction

470 Fourth Ave., New York 16, N. Y.

THE "Master Champ" HYCYCLE VIBRATOR



ELIMINATES FLEXIBLE
SHAFT AND PROVIDES
VIBRATION ANYWHERE
WITHIN 300 FEET

- ★ HIGHSPEED VIBRATOR 10,300 RPM. NO EXCESSIVE HEATING DURING NORMAL OPERATION
- ★ 2 SINGLE PHASE OUTLETS FOR 1200 WATTS LIGHTING
- ★ THOROUGHLY TESTED

This new MASTER power unit is really the CHAMP of portable hycycle vibrators... it moves easily from place to place on the job as it weighs only 172 pounds. It operates TWO Master Model HV-8 Hycycle Vibrators or 1200 watts of light... or one vibrator and 600 watts of light. And best of all... IT PROVIDES VIBRATION ANYWHERE WITHIN 300 FEET of the power unit.

- ★ COMPACT, LIGHT WEIGHT, VERY PORTABLE. WEIGHS ONLY 172 LBS.

- ★ WATER TIGHT CONNECTIONS

- ★ EASILY ACCESSIBLE AND REPLACEABLE FUSES

The MASTER CHAMP is powered by a 4/4 H.P. Wisconsin gasoline single cylinder air-cooled engine at 3200 R.P.M. The vibrating unit provides high speed vibration at 10,300 R.P.M. Conductor cables and operating vibrator cables are available in various lengths.

WRITE TODAY STATING YOUR REQUIREMENTS.



MASTER VIBRATOR COMPANY • DAYTON 1, OHIO

MASTER

BETTER PRODUCTS FOR BIGGER PROFITS



Master Portable
Generator Plants
½ KW to 100 KW

Master Vibratory
Concrete Finishing
Screed

Master Power-
Blow Electric
Hammer and
Spade

Master
Space
Heaters

Master Gas
or Electric
Concrete
Vibrators

Runway Is Extended At Air Force Base

1,000 Feet More of 14-Inch Plain-Concrete Pavement Gives Jet Planes an 8,000 x 50-Foot Runway at Langley Field, Va.

• THE fast-changing aspect of runway construction, influenced by the emphasis on larger planes and jets in particular, is well illustrated in recent improvements at Langley Air Force Base, Elizabeth City County, in southeastern Virginia. Back in 1940, a plain-concrete runway, 6 inches thick and 150 feet wide, was built with a length of 7,000 feet, the longest on the field. By 1944, the use of heavier planes developed during the war necessitated thickening this pavement to 14 inches by adding an 8-inch top course of concrete.

Last year when jet bombers began using the field, this runway was extended to 8,000 feet with a 14-inch plain-concrete pavement. A 2,000-foot taxiway, 75 feet wide, was also constructed with a 14-inch concrete pavement to provide access to the far end of the extended runway.

This runway work at the air base was only part of a \$2,000,000 improvement project which also included the construction of aviation gas facilities, tank farms, pipelines, and water supply. The U. S. Army Corps of Engineers, Norfolk District, supervised the work for the Air Force. Speed was the keynote of the entire job, and the paving was completed in 60 days—from May 10 to July 10. The other features of the work were concluded last fall.

A Joint Venture

Construction was done under a contract awarded as a joint venture to three Norfolk, Va., contractors—Ames & Webb, Inc.; Vanguard Construction Corp.; and E. V. Williams. They in turn divided the runway construction into three subcontracts, with the Ferguson Corp. of Hampton, Va., laying the storm-drainage system; Perkins & Barnes Co. of Blackstone, Va., doing the grading; and Hechler Bros. of Richmond, Va., handling the concrete paving.

The improved runway, longest of four at the field, is laid out in an east-west direction, with the 1,000-foot extension added at the west end. It was closed to air traffic during the construction, and the jet-bomber squadron was forced to use a 6,000-foot runway, the next-longest at the field, during the interim. The need for haste was obvious, and the parceling out of the work resulted in more intensive application of men and equipment with a satisfactory completion of schedule.

Storm-drainage work consisted mostly of laying 6,000 linear feet of 24 and 30-inch concrete pipe. Earthwork was light, only 74,000 cubic yards, since the runway had already been graded well beyond the paving strip as a safety measure for overrun. An item of 150,000 square yards of special compaction included a 9-inch depth of subgrade under the pavement and 9 inches over the 200-foot shoulders that sloped away to drainage ditches paralleling the runway.

Special Compaction

In this coastal-plain area the soil is about 40 per cent clay and 60 per cent sand. Under the pavement the subgrade was compacted to 95 per cent maximum density at optimum moisture, while the shoulder area was compacted to 90 per cent. The overrun area beyond the new paving was also compacted to 90 per cent. Tamping rollers were used to produce the required results.

The 150-foot runway pavement is

crowned at the center, and slopes to the edges on a 1 per cent grade. Shoulders slope off on a 1.5 per cent grade. Paving was done in 25-foot lanes, with but a single transverse expansion joint at the midway mark in the 1,000-foot extension. This expansion joint is a ¾-inch strip of impregnated felt set with its top ¾ inch below the surface of the concrete. Through it go 1¼ x 20-inch dowels on 15-inch centers. Assemblies and joint steel were supplied by the Virginia Steel Co. of Richmond.

Transverse dummy-groove joints oc-



C. & E. M. Photo

At the batch plant serving Langley Field, a Marion crane loads a Blaw-Knox aggregate bin with sand from a gondola car.

cur in the paving lanes on 25-foot centers, and longitudinal joints of the same type run down the center of each lane, dividing it into 12½-foot strips. These

joints are V-shaped—3½ inches deep x ¾ inch wide at the top and ¼ inch wide at the bottom. All joints were

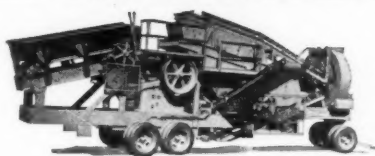
(Continued on next page)

The UNIVERSAL 293Q TWIN DUAL PACEMAKER

gives you these

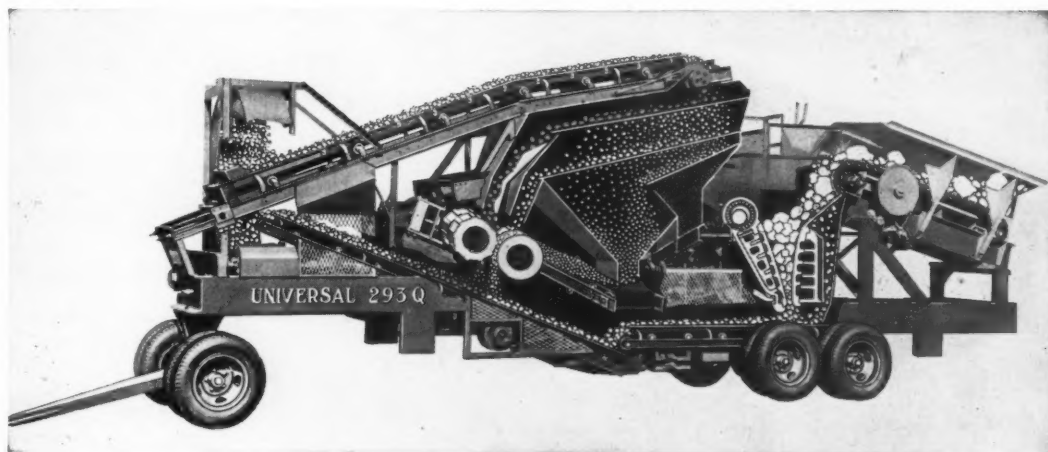
EXCLUSIVE

Profit-Making Advantages



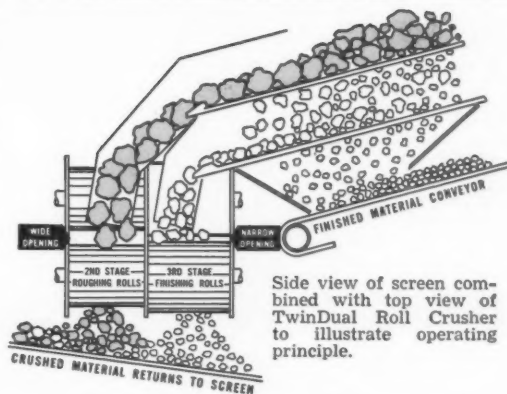
- ★ TwinDual Roll Crusher
- ★ Three separate crushing operations
- ★ Primary and Secondary on single truck
- ★ Only one plant to move instead of two
- ★ Only one power unit to service

- ★ Flexibility for rock or gravel
- ★ 20% greater screening efficiency
- ★ Better quality finished aggregate
- ★ Lower initial cost — lower maintenance cost
- ★ Top production



PIT OR QUARRY — rock or gravel. Name your operation. The TwinDual Pacemaker sets new standards for profitable hour after hour tonnage at low cost per ton. Three crushing operations with Universal's exclusive TwinDual Method provide top capacity, divide the load between three crushing stages. Permit a more favorable ratio of reduction resulting in longer crusher life, less maintenance and better quality finished product.

There is much more to the profitable TwinDual Story. Facts are yours for the asking. Bulletins U520 and U501 will give you detailed information.



Side view of screen combined with top view of TwinDual Roll Crusher to illustrate operating principle.

UNIVERSAL ENGINEERING CORPORATION division of PETTIBONE MULLIKEN CORP.

620 C Ave., Cedar Rapids, Iowa
Phone 7105

4700 W. Division St., Chicago 51, Illinois
Phone SPaulding 2-9300



Runway Is Extended At Air Force Base

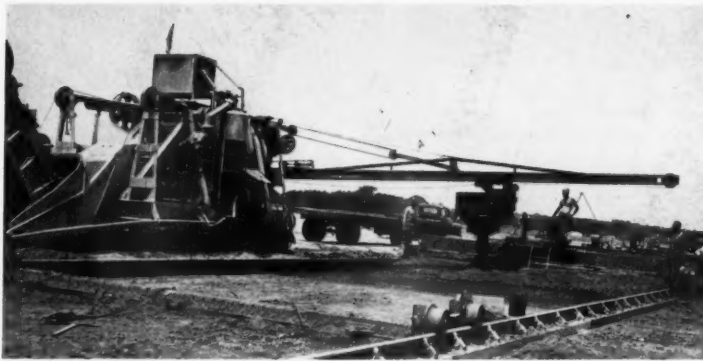
(Continued from preceding page)

rounded off with a 1/4-inch-radius edging tool. In the outside lanes, 5/8 x 30-inch tie bars were inserted in the concrete on 30-inch centers.

Batch Plant on Project

For laying the some 40,000 square yards of pavement, the contractor decided to set up a batch plant within the field and haul the proportional materials to the paver. The plant consisted of a Blaw-Knox 150-ton three-compartment aggregate bin and a Blaw-Knox 300-barrel cement bin. These two units were erected along a siding of the Chesapeake & Ohio Railroad spur that serves Langley Field. Lone Star bulk cement was shipped in from Roanoke, Va., while the aggregate was supplied by the Commonwealth Sand & Gravel Co. of Richmond.

Two sizes of coarse aggregate and



C. & E. M. Photo

A Ransome 34-E dual-drum paver drops runway concrete in front of a Jaeger-Lakewood dual-screed finisher.

sand were delivered in gondola cars. The material was either stockpiled at the side of the track or charged directly into the bin by a Marion crane equipped with a 65-foot boom and a Blaw-Knox 1 1/4-yard clamshell bucket. A fleet of

Hechler Bros. own trucks—Chevrolets and Internationals—carrying two batches each hauled the material to the paver; the cement was contained

in separate metal boxes to prevent loss. An average of 10 trucks was used throughout the job for the average 1-mile haul.

The concrete was designed for a 3,500-psi compressive strength at 28 days. At the plant 12 ounces of Darex air-entraining agent was added to each batch. The mix had an average slump of 1 1/2 inches. The weights of a typical 6-bag batch were as follows:

Stone, 3/4 to 1 1/2-inch	911 lbs.
No. 4 to 3/4-inch stone	1,063 lbs.
Sand	1,075 lbs.
Cement	564 lbs.
Water	271 lbs.
Total	3,884 lbs.

A batch yielded 1 1/2 yards of concrete, but with the thick 14 inches of pavement one batch accounted for only 1.23 linear feet of 25-foot lane.

Paving 25-Foot Lanes

The contractor brought to the job a
(Continued on next page)



Preferred power on cement surfacing and concrete working machines — the world's most widely used single-cylinder gasoline engine on tools, machines, appliances used by the construction industry, railroads, oil fields, other industries, and on farms and farm homes.

YOU know you have the right power when the power is Briggs & Stratton — the accepted leader in single cylinder, 4-cycle, air-cooled gasoline engines. Briggs & Stratton Corporation, Milwaukee 1, Wisconsin, U.S.A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

WHERE ARE YOUR BLUEPRINTS? STOP WASTING COSTLY TIME AND ENERGY LOOKING FOR LOST BLUEPRINTS!



No Wrinkles!

No Creases!

No Curled Edges!

Files efficiently:

Drawings	Maps
Tracings	Charts
Surveys	Plans

DRAW-IN-DEX CABINET protects your valuable prints—keeps them in excellent condition. You find them immediately when you need them. Efficient filing.
• Blueprints hang smoothly. (Stay clean, fresh, live longer!)
• Cabinet accommodates 1250 prints.
• Index file locates your prints instantly.
• Immediately accessible—remove any print without disturbing others.
Heavy steel construction; with lock; variety of colors. \$139.50 F.O.B. Huntsville, Alabama. Write for full information.

EMPIRE DEVELOPMENT CORPORATION

Dept. 5 15 Park Row New York 38, N. Y.

No other Barrow Except
Jackmanco has it!

PRESS FORMED, DOUBLE
FOLDED CORNER CONSTRUCTION

Oldest and Largest
Wheelbarrow Maker
in America



M11-24B
Model



Extra Strength for long life
Non-Leakable
Easy Pouring

This is just one of the many superior features of JACKMANCO Barrows and one of the reasons why Contractors buy more JACKMANCO Barrows than any other make.

JACKSON MANUFACTURING CO.
HARRISBURG, PENNSYLVANIA



C. & E. M. Photo

Aero-Seals rubber-compound joint filler heated in a Seals-Melter is drawn off into a pouring can

total of 2,100 linear feet of Blaw-Knox steel road forms, 9 inches in depth. To use these for the 14-inch paving, he bolted strips of oak, 5 inches deep x 10 inches wide, to each 10-foot form section. The timber was secured to the form base with eight 1/2-inch bolts. These built-up sections weighed about 600 pounds each, and were too heavy to be set by hand, so a Link-Belt Speeder crane with a 35-foot boom worked along with the form crew both for setting and dismantling the steel and wood forms.

Pins were driven by hand as the two lines of forms were brought to grade 25 feet apart. Any excess material was removed from the subgrade with a Cleveland Trailgrader that rolled along on the forms as it was pulled by a Galion motor grader that had done some preliminary shaping. Forms were oiled and the subgrade was wet down in preparation for the laying of concrete.

Paving started next to the existing runway in a lane just off the center line, and continued out to the end of the extension. Alternate lanes were then paved so that the paver, a Ransome 34-E dual-drum machine, was always working outside the lane being laid, either on the subgrade or on the already cured concrete.

Finishing Operations

Water for the mix was obtained at the air base and brought to the site in two 1,500-gallon tank trucks. While one truck was getting filled, the other was supplying the paver through an 80-foot length of 2-inch hose. The pump on the paver drew the water from the tank truck. Batches were mixed for one minute, then deposited off the 35-foot boom of the paver onto the subgrade. On the runway work the concrete was struck off level with the top of the forms by a Blaw-Knox spreader. This was followed by a Jaeger-Lakewood dual-screed finishing machine.

After the runway was completed and the work had shifted to the taxiway, the spreader was dispensed with for

part of the paving, and the striking off was done by the dual-screed finisher. Before the concrete was leveled off, the longitudinal tie bars were inserted at their mid-depth position in the slab along the center of the lane. The steel bars were laid on hooks fastened to a plow-handle device that was pushed down into the concrete. When the bottom reached the subgrade, the bar was easily disengaged and left in place while the hand tool was removed from the concrete.

When dowels were inserted in the outside lane, they were pushed through holes in the forms after the dual-screed finisher had made its pass. Next in line came a Koehring Longitudinal Finisher that was followed by a Heltzel Cleft-Plane joint installer. A wheel on the front of this unit cut a slot in the concrete for the longitudinal center-line joint, while saw-tooth blades at the rear cut other slots at right angles for the transverse dummy-groove joints. The operators of the joint machine inserted interlocking steel

strips to fill out these slots to the required joint dimensions. For the longitudinal joints the strips were 4 feet long, while for the transverse joints two 12 1/2-foot strips were used.

Curing and Sealing the Joints

Some hand work followed the mechanical finishing operations. Finishers with long-handle straightedges checked for irregularities in the surface right

behind the machines. Then a 10-inch-wide composition belt, fastened to plow handles at the ends, was dragged along the concrete to remove any ripples and to leave the surface with the desired texture. Next, working from a bridge, came the finishers who removed the steel strips from the joints when the concrete had begun to set up slightly. They edged the joints and rounded

(Concluded on next page)

POWER PLANTS SPEED CONSTRUCTION

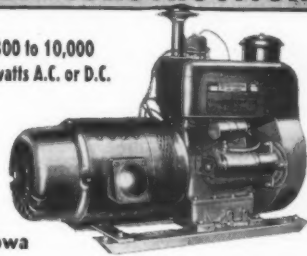
Use Power Tools—Flood Lights

Winpower Portable Electric Plants provide a dependable, low cost power source . . . speed up work performance by operating time and labor saving power tools. Winpower Nite-Hawk units give power plus built-in floodlights. Every contractor should use these high efficiency, quality built plants.

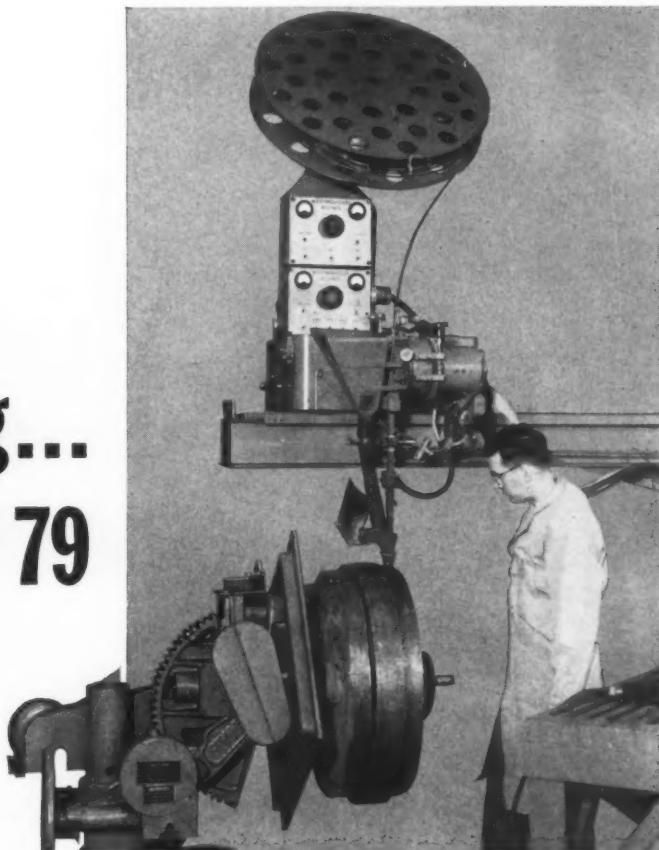
WRITE FOR LITERATURE AND PRICES

WINPOWER MFG. CO., Newton, Iowa

300 to 10,000
watts A.C. or D.C.



Announcing... Amsco AW 79



for AUTOMATIC HARDFACING

AMSCO AW 79 will meet your every requirement for better control of wear where abrasion and high impact are important factors—plus giving you all the advantages of automatic welding. It can be used for reclaiming parts worn to uselessness or for increasing productivity of new parts.

The result of extensive research and field testing, AMSCO AW 79 is especially suitable for rebuilding and hardfacing tractor rollers and idlers. Back-up rolls, steel wheels, sheeting rolls, dredge pins, as well as dozens of other applications, can be successfully hardfaced with AW 79. It can be used on any conventional automatic submerged arc

welding equipment now being used.

AW 79, the first in a series of rods by AMSCO for automatic hardfacing, is an alloy steel electrode fabricated by encasing particles of alloy metals in a continuous steel tube. Deposits are of martensitic alloy steel with chromium and molybdenum as the principal alloying agents. It is available in coils weighing approximately 100 lbs., each with an inside coil diameter of 22 1/2", and is stocked in wire diameters of 5/32" and 3/16". Packed in cardboard containers with an anti-rust agent, other coil diameters and sizes are available on request. Write today for complete information.



C. & E. M. Photo

At left is William Shaw, Resident Engineer for the Corps, and with him is Edward W. Hechler of Hechler Bros.

AMERICAN

Brake Shoe

COMPANY

AMERICAN MANGANESE STEEL DIVISION

395 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que. Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

Runway Is Extended At Air Force Base

(Continued from preceding page)

them off.

All joints were then covered with a 4-inch-wide strip of tar paper in order to keep that part of the concrete clean and free of the curing compound, so that a good bond would be established with the joint-sealing material. Permite was then sprayed on to cure the concrete, and the joints were poured with Aero-Sealz, a rubber compound particularly resistant to the heat created by jet fuel. The material was first heated to a temperature of 450 degrees F in a Sealz-Melter, and then drawn off into a special-type pouring can for filling the joints by hand.

Water Supply and Personnel

Aside from the runway and taxiway construction, the most significant part of the improvements at Langley Field was the augmenting of the water sup-

ply. New lines were laid into the base from Big Bethel, Va., and were continued to Fort Monroe to the south to supplement the existing supply lines. Altogether 8,000 feet of 20-inch and 32,000 feet of 14-inch water mains were installed.

An average force of 300 men was engaged in the improvement project. The three-contractor joint-venture team was represented by E. D. Hubbard, Superintendent. On the paving work, Edward W. Hechler of Hechler Bros. had J. D. Penney for his superintendent.

For the U. S. Army, Corps of Engineers, William Shaw was Resident Engineer. The Norfolk District in charge of the work is headed by Col. W. F. Powers, District Engineer. E. K. Jackson is Chief, Construction Division.

New Trenching Unit

A rubber-tired ladder-type trencher for utility excavations has been announced by the Parsons Co., Box 431, Newton, Iowa. The Model 88 Trench-



Parsons makes this rubber-tired Model 88 Trenchmobile and recommends it for utility excavations. It digs to 5 feet deep and 8 or 12 inches wide.

mobile digs to 5 feet deep and 8 or 12 inches wide.

Powered by a 43.6-hp gasoline en-

gine, it is constructed on an all-welded arch-type frame. A number of speed selections are provided for operating the bucket line and conveyor belt while moving forward. The 88 travels at about 12 mph between jobs. Pneumatic-tire mounting plus low ground pressure permits working and traveling over sidewalks, driveways, and lawns without surface damage.

The unit features controlled discharge through a reversible and shiftable belt conveyor, a telescopic ladder-type boom with positive down-crowd, and a hinged crumbler that permits vertical set-ins and undercutting.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 883.

Data on Welding Torches

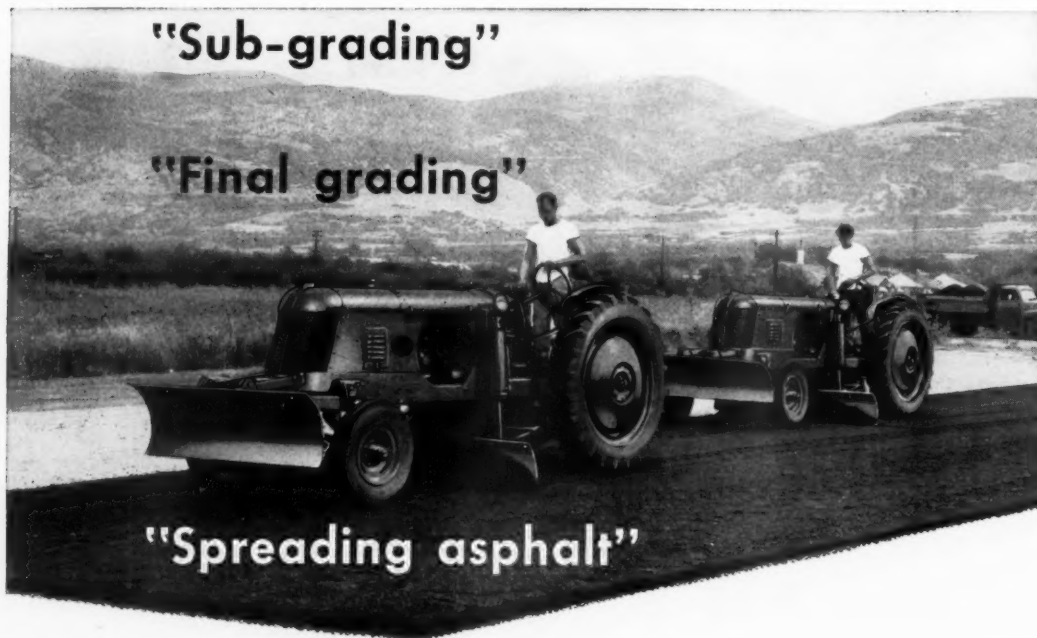
The features of a line of welding and cutting torches are listed in a booklet published by National Welding Equipment Co., 218 Fremont St., San Francisco 5, Calif. The booklet describes the company's complete line of tips, nozzles, and attachments for welding, soldering, brazing, lead burning, preheating, and flame-cutting. It highlights the cone-end sealing rings on the National torches, the special joint for turning the tip, the velocity and flashback control mixer, the fine needle valves, and the internal cone cutting tip seats.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 892.

Pittsburgh Corning Appoints

Harry W. Bennett is District Manager of the Chicago office of Pittsburgh Corning Corp., Pittsburgh, Pa., manufacturer of Foamglas and PC glass blocks. His headquarters are in Chicago's Engineering Building.

Mr. Bennett's predecessor, C. P. Barrett, is now Eastern Manager of Industrial Insulation Sales and has his headquarters at 30 Rockefeller Plaza, New York City.



"HUBER MAINTAINERS ARE THE Handiest Things!"

H. Sessions & Sons of North Salt Lake, Utah, make many uses of a pair of Huber Maintainers in connection with the asphalt laying service they offer in Utah and nearby states. They've been in the business since 1945, a fact that adds significance to the comment of Mr. Sessions that "the Huber Maintainer is the handiest thing there is in a piece of machinery."

The 6,000-pound, 42½ H. P. Maintainers handle sub-grade and final grading work and spread asphalt. The two of them spread 500 tons in eight hours . . . on another job one of them spread 50 tons in 3½ hours. The Maintainers are "just the right size for laying asphalt," Mr. Sessions said.

Mr. Sessions needs only the Maintainer blade and the bulldozer attachment in his work . . . but you can have any or all of the other HYDRAULICALLY CONTROLLED attachments which enable the Maintainer to work as a lift-loader, highway mower, berm leveler, road planer, broom, snow plow or patch roller.

Huber Maintainers are handling scores of jobs for federal, state, county, municipal and township owners as well as contractors and other private users. Why not learn today, from your nearest Huber Distributor or by writing to the factory, what the Huber Maintainer can do to help you?

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.

Manufacturers of Huber Maintainers, Graders
and Complete Line of Rollers



— M-SCOPE —

Pipe Locator

MODEL AB

ONE-MAN OPERATION

METAL CASED CABINETS

HEAVY DUTY PERFORMANCE

ONLY \$149.50

— FREE LITERATURE —

FISHER RESEARCH LAB., Inc.

Palo Alto California



The plastic window in this American respirator hood is now replaceable—thanks to seven snap fasteners.

Replaceable Window For Respirator Hood

A replaceable plastic window for the No. 75 respirator hood is now available from American Optical Co., Southbridge, Mass. Held on with 7 snap fasteners, it is said to provide good frontal and side vision.

The lightweight hood, which protects against dust and paint spray, has two drawstrings which tie under the arms. It is reinforced with leather and is adjustable to any head size. It is available with the company's seven interchangeable cartridge and disk-filter respirators.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 939.

HRB Frost-Action Literature

Now available from the Highway Research Board are two important publications on frost action: Special Report No. 1—"Frost Action in Roads and Airfields: A Review of the Literature, 1765-1951" by A. W. Johnson; and Special Report No. 2—"Frost Action in Soils: A Symposium."

The first report contains a comprehensive review of the important literature relative to frost action published during the past two centuries. Designed for practicing highway engineers as well as for engineers and scientists engaged in frost-phenomena research, the 300-page publication contains 241 figures and is priced at \$3.00 per copy.

Report No. 2 contains 38 technical papers presented at the Thirtieth Annual Meeting of the Highway Research Board. The papers are grouped into seven principal divisions: 1. Climate and Distribution of Soil; 2. Soil Temperature and Thermal Properties of Soils; 3. Soil Moisture and Soil Movement; 4. Basic Data Pertaining to Frost Action; 5. Frost Action and Spring Breakup; 6. Remedies and Treatments; and 7. Needed Research Pertaining to Frost Action. The 394-page symposium is well illustrated and costs \$3.75 per copy.

Orders for one or both of these publications may be sent to the Highway Research Board, 2101 Constitution Ave., Washington 25, D.C. Postage to foreign countries for either publication is 30 cents per copy.

Millionth Construction Toy

The world's largest maker of miniature construction equipment produced its millionth unit on March 5, a Heiliner scraper. Although one-sixteenth the size of the regular bulldozers and road graders you see on highways, the toys made by Charles William Doepke Mfg. Co., Blue Ash Road and Emerald Ave., Rossmyrne, Ohio, are all accurate steel scale models of big road-building equipment. Manufacturers lend blueprints of their equipment and the

Doepke brothers trim them down to sand-pile size. Major features are retained to give kids the feeling they're big-time contractors.

Though they have built only five models up to now, the brothers are breaking their own tradition this year by introducing three new toys—a bulldozer, pumper fire truck, and chain bucket loader.

Loader with Crowding Action

A front-end loader unit with hydraulically operated crowd action is illustrated in a 4-page booklet issued by Lessmann Mfg. Co., 20th and Easton Blvd., Des Moines 4, Iowa. The shovel-type loader digs to 12 inches deep below wheel level and unloads at a 42-inch forward sweep from the tractor, at heights up to 9 feet 4 inches. A back-filler blade and crane attachment are also available.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 879.

HERE'S A FASTER, EASIER, CHEAPER WAY TO HANDLE MORE DIRT, ROCK OR GRAVEL!

OMAHA STANDARD TRAILERS



The OMAHA STANDARD "CENTER DUMP" Trailer . . .

. . . Custom Built to Job Requirements is designed for contractors who want to haul dirt, gravel, rock, long or short distances, quickly and at low cost, for stock piling, spreading or dumping. Contractors say it is just what they have been looking for!

- ★ Each unit built to job requirements.
- ★ Available in sizes and lengths to meet all bridge and axle laws.
- ★ All steel welded body, chassis. Built to withstand roughest loading, toughest service.
- ★ Dumping mechanism FOOL-proof—trouble-FREE!
- ★ Release on doors INSTANT, SHOCK-PROOF, protected from material flow.
- ★ DOOR OPENING Meter control that can be pre-set.

Write at once for specifications and descriptive folder that will answer your questions and show how you can make every load a "profit" load. Address today—

OMAHA STANDARD

FACTORY & GENERAL OFFICES

2411 West Broadway Council Bluffs, Iowa

STANDARD EQUIPMENT WITH THE LEADERS

INTERNATIONAL HARVESTER

CATERPILLAR

ALLIS-CHALMERS

TRACTOR DIVISION - MILWAUKEE 1, U. S. A.

CRANE & SHIELD CORP.

LAPLANT & CHATELAIN

GALION

HEIL CO.

CARCO

WINCHES

MYSTER

COMPANY

... BECAUSE IT LASTS LONGER

Leading manufacturers everywhere specify Velvetouch . . . because Velvetouch clutch plates, facings and brake linings insure extra hours of dependable, trouble-free service. This means extra savings for the user. And extra savings for you when you replace with Velvetouch—made by the world's largest manufacturer of all-metal friction products. For details contact your jobber, our nearest branch . . . or The S. K. Wellman Co., 1374 E. 51st St., Cleveland 3, Ohio.

Velvetouch

THE S. K. WELLMAN CO. WAREHOUSING CENTERS

ATLANTA—119 14th St., N. E.
Atlanta 5, Georgia

LOS ANGELES—1110 S. Hope
Street, Los Angeles 15, Calif.

TORONTO, ONTARIO
The S. K. Wellman Co. of Canada,
Ltd., 2839 Dufferin St.

CHICAGO—1500 South West-
ern Ave., Chicago 8, Illinois

PHILADELPHIA—97 E. Mon-
tana St., Philadelphia 19, Pa.

EXPORT DEPARTMENT—
8 So. Michigan Ave.,
Chicago 3, Ill., U. S. A.

CLEVELAND—1392 East 51st
St., Cleveland 3, Ohio

PORTLAND—636 N. W. 16th
Ave., Portland 9, Oregon

WASHINGTON OFFICE—
1181 Vermont Ave., N. W.,
Washington 5, D. C.

DALLAS—3407 Main Street,
Dallas 1, Texas

SAN FRANCISCO—424 Bryant
Street, San Francisco 7, Calif.

WSB Welfare-Fund Policy: Some Contractors Dissent

The health and welfare policy approved by the Wage Stabilization Board provides that, under a regulation to be issued, employer payments of 7½ cents per hour into health and welfare funds generally will be adopted. However, the recommendation of the Construction Industry Stabilization Commission, upon which the policy was approved, was not unanimous. Two members—James D. Marshall, Assistant Managing Director of The Associated General Contractors of America, and Everett W. Dunn—dissented.

Their chief grounds for dissent are that the proposed policy is unstabilizing and inflationary. Labor conditions in the construction industry are peculiar to that industry; employment is intermittent and seasonal; workmen migrate from job to job and from one employer to another, often moving from densely populated areas where local unions have large memberships to isolated areas where there is a small local-union membership. Local bargaining will be destroyed, the dissenters argue, by denying to vast numbers of construction workers the privilege of choosing between welfare plans and corresponding wage increase. Each union will succumb to the tendency to bargain for a health and welfare fund under the WSB policy. A great inequity will thus be created between large and small unions.

The dissenting Commission members think it would be fairer to permit the smaller organizations the privilege of having, instead, an additional amount in their wages. Increases in existing health and welfare funds, or the creating of new funds in construction at

this time, are just as inflationary as wage increases, because they will increase the cost of construction work; they should therefore be charged to allowable wage increases. Finally, the WSB scheme will permit Government interference with private enterprise, and the action of the Federal government will encourage local labor officials and employers to rush into ill-conceived plans before they can be assimilated in given local areas, because wage increases are limited and benefit funds may be had.

The AGC, at its 33rd Annual Convention in Detroit, Mich., February 25-28, heard the dissenting opinion of Mr. Marshall and Mr. Dunn. It accordingly adopted a resolution expressing vigorous opposition to actions by any Federal agency which help to promote the establishment of health and welfare funds in construction through the exercise of powers intended only for the purpose of wage stabilization.

Mud-Pumping Equipment

A catalog on a line of mud-pumping units is available from Koehring Co., 3026 W. Concordia Ave., Milwaukee 16, Wis. It shows the Model 10 and Model 50 Mud-Jack raising concrete road slabs, stabilizing trench settlements under street slabs, correcting factory floor grades, and pumping grout to seal leaking sewers.

The Model 10 is powered by a 1¼-hp gasoline engine and pumps 47 cubic feet per hour. The 4-tire Model 50 runs on a 28-hp engine and has a capacity of 260 cubic feet of material per hour.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 870.


Save...

switch to WARSOP

drills and breakers



WARSOP
S 6 BREAKER



WARSOP
ROCK DRILL

It's real economy

- ★ Low Initial Cost
- ★ Low Maintenance Cost
- ★ Low Operating Cost
- ★ Low Transportation Cost

No Battery • Positive Dual-Fan Cooling
Variable Speed Control • No Springs
Completely Self-Contained

There's real Savings when you use Warsop Portable Rock Drills and Breakers on all types of construction and demolition work. With Warsop hard-hitting power tools you need no cables, no hose. Compact and light in weight, they are easily transported from job-to-job. Wherever you have breaking or drilling jobs that require only one or two machines figure to use WARSOP. You'll save time, labor and equipment costs.

Write for descriptive folders and specifications.

WARSOP POWER TOOLS, Inc.
P. O. BOX 1809, WILMINGTON 99, DEL.

W a r s o p

PORTABLE DRILLS—BREAKERS
self-contained—gasoline engine driven

SOLVE YOUR HAULING PROBLEMS WITH A "TRANSPORT TRAILER"

Capacities through 75 Ton—Semi and Full Trailers



CARGO CARRIER MODEL GPX (Semi) with Tandem Axles

PATENTED TANDEM AXLE ASSEMBLY—Featuring unusual lengthwise and sidewise wheel accommodation to irregularities in the road. Use of full width tubular forged, heat treated axles with CAMBER.

FRAME—Constructed of beam sections throughout, electric welded. A rugged, strong and efficient unit with minimum weight.

TRANSPORT TRAILERS, INC.
TRANSPORTATION ENGINEERING A SPECIALTY
CEDAR RAPIDS, IOWA, U.S.A.

**IMPORTANT
UNIT...**



in an interesting

BULK HANDLING Set-Up

This 4-ton traveling crane of well known high quality expends its energy and efficiency through this 3-ton capacity.

OWEN BUCKET

Clay discharged into the craneway is water treated by fog-nozzles to reduce dust and increase water content to aid in ageing.

The 15,000-ton capacity warehouse 840' x 50' is serviced by two cranes and two buckets. Only two men are required to move the clay, combine the mix and feed the bins for the dry pan.

All of which simply proves again that for the greatest returns on the large investment in the crane it is also wisdom to buy the most efficient bucket available—an OWEN!



"A mouthful at every bite"

BUCKETS AND GRAPPLES

Write for Catalog

THE OWEN BUCKET CO.
6030 Breakwater Avenue • Cleveland, Ohio
Branches: New York, Philadelphia, Chicago, Berkeley, Calif.

Study Shows Granular Subbase Limits Pumping

Also Indicates Correct Shoulder Shaping Prevents Water Trapping At Pavement Edges

FURTHER evidence that granular subbases can prevent pumping where concrete pavements are laid in areas of fine-grained soil was presented at the recent Highway Research Board meeting in Washington, D. C. W. E. Chastain, Sr., and J. E. Burke of the Bureau of Research and Planning of the Illinois Division of Highways, discussed the first results of a performance study now being conducted on 180 miles of U. S. 66.

The initial field work consisted of noting and mapping all failures and unusual conditions such as cracks, pumping at joints and cracks, shoulder holes, faulting, spalling, corner breaks, scaling, D-cracking, and raveling.

Pavement Types

The stretch of pavement investigated carries an average of 5,000 vehicles per day. About 85 miles of it rests on either trench or shoulder-type granular subbase. Drainage is provided with the trenched type only at isolated locations.

In general the concrete pavement is 24 feet wide and 10 inches thick. The sections built during the war contain no reinforcing, have bituminous fiber expansion joints at 120-foot intervals, and have intermediate weakened-plane contraction joints at 20-foot intervals. There are no load-transfer devices. The postwar pavements included in the study contain mesh reinforcement and have bituminous fiber expansion joints every 100 feet. There are no contraction joints, but $\frac{3}{4}$ -inch dowels on 13½-inch centers transfer load at expansion joints.

Most of the subbases are of the undrained trench type and consist of 6 inches of well graded material. The specifications for gradation observed in their construction required that 100 per cent pass the 3-inch sieve, 35 to 65 per cent the No. 4 sieve, not more than 20 per cent the No. 50 sieve, and not more than 10 per cent the No. 200 sieve.

A compaction to at least 90 per cent of maximum wet density, as determined by AASHTO testing procedure, is required for embankment construction in Illinois. In addition, no material may be placed when the moisture content exceeds 120 per cent of wet optimum.

Pumping

The study showed that only a limited amount of pumping was taking place on pavements over granular subbase. For the wartime design, the effectiveness of the subbase was measured by similar pavements placed on fine-grained soils. A total of 20.2 miles of pavement on subbase showed 2.4 pumping locations per mile, while 18.1 miles of similar pavements on fine-grained soil showed 79.4 locations. Although a similar comparison is not possible with the postwar pavements, the study showed only 1.2 pumping locations per mile for the 64.6 miles tested.

A few excavations were made where evidence of pumped granular material appeared on the surface. In each case a small tunnel was found in the shoulder at the pavement edge near the bottom of the slab. The tunnel was connected with the surface by one or more holes through which granular material had been ejected, and was found to be partially filled with loose granular material washed clean of fines. Excavations some distance away from the joints where pumping was found showed tunnels to be limited in extent.

An investigation of the subbase at the pavement edge at the affected locations revealed that it was not in full contact with the bottom of the slab. A layer of loose granular material washed of fines and about $\frac{1}{4}$ inch thick was found underneath the slab. A screw driver with a shank about $\frac{1}{4}$ inch in diameter could be easily inserted between pavement and subbase for the entire length of the 6-inch shank. Immediately below was a $\frac{1}{4}$ to $\frac{3}{4}$ -inch zone in which the subbase appeared to be discolored with shoulder material. This, and the undisturbed subbase below, appeared to be quite dense and contained no free water. In a few instances, the space between the bottom of the slab and the subbase was found to contain a small amount of free

water when the excavations were made.

Where granular material was found ejected to the surface, the largest particles ranged up to $\frac{1}{8}$ inch in size, grading down to minus No. 200 material which was visible only as a stain on the pavement.

Shoulder Holes

Shoulder holes were found with both pavement designs, but occurred much more frequently with the wartime design. The 20.2 miles of wartime-design pavement showed an average of 209.4 shoulder holes per mile. Excavations at a number of locations where shoulder holes were found showed that the holes extended to the bottom of the pavement. In many instances the pavement did not appear to be in good contact

with the subgrade in the vicinity of the holes, and sometimes the discoloration and character of the material immediately underneath the slab suggested that shoulder material had actually washed in between the pavement and subbase.

Chastain and Burke concluded their report by pointing out that granular subbases had been effective in the control of pumping. Although shoulder holes were common, they added, no pavement failures could be attributed to them and no direct connection between them and pumping had been established. They recommended, however, as a profitable maintenance effort, filling such holes and sloping shoulders to lines and grades that prevent the entrapment of water at pavement edges.



AUSTIN-WESTERN

PRESENTS

More Rock for Less Money



30 minutes of action, in 16 mm. color and sound, picturing portable and stationary crushing and washing plants, and the basic units of which they are composed. Your nearby A-W distributor will be glad to arrange a showing for you.

To keep material pouring off the end of the delivery conveyor... for MORE YARDS per HOUR at LESS COST per YARD... it takes a crushing plant by AUSTIN-WESTERN. Whatever your individual requirement... small portable unit with single crusher and screen, multiple portable unit or stationary plant... whatever the product, whatever the material... agricultural limestone, sand, stone chips, coarse stone or slag... there's an Austin-Western plant to fill the bill... an Austin-Western plant that means MORE ROCK for LESS MONEY!

AUSTIN-WESTERN COMPANY · Subsidiary of Baldwin-Lima-Hamilton Corporation · AURORA, ILLINOIS, U.S.A.

Austin Western

SINCE 1859—BUILDERS OF CONSTRUCTION EQUIPMENT



Perlite-Plaster Test Shows Steel Savings

Tons of critical structural steel can be saved in future buildings by using a new lightweight fireproofing for steel columns, according to the Metal Lath Manufacturers Association, Engineers Bldg., Cleveland 14, Ohio. During recent tests by the Underwriters' Lab-

oratories in Chicago, a 10-inch steel column 8 feet long, protected with a thin membrane of metal lath and perlite plaster, was placed in a room-size gas furnace and exposed to temperatures as high as 2,000 degrees F to simulate a flaming building. The temperature of the column at the end of four hours was well below the point where steel will twist or buckle. Four-hour

column protection is the maximum required by any building code.

Self-furring metal lath is wrapped around the column, corner beads are attached, and gypsum-perlite plaster is applied to a thickness of 1 3/4 inches. Perlite is substituted for sand in the plaster because it is a lightweight material able to insulate against high temperatures. Metal lath embedded in the plaster gives a two-way reinforcing against temperature and structural stresses.

This new fireproofing is said to be one-seventh the weight of standard protections. The weight savings in an average 12-story building supported by 20 columns will exceed 260 tons, states the Association.

Perlite is produced by heating and "popping" a siliceous volcanic rock. Weighing only one-tenth as much as sand, it is used as an aggregate for concrete as well as for plaster.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 893.

Centrifugal Pumps

There are three new models in the line of self-priming centrifugal pumps made by Rice Pump & Machine Co., N. Milwaukee St., Grafton, Wis. Conforming to the standards of the Contractors Pump Bureau of the Associated General Contractors, the 20M, 30M, and 40M feature cartridge-type shaft seals and open-type nonclogging impellers. They are powered by air-cooled gasoline engines, and are available mounted on skids, two pneumatic-tired wheels, or steel wheels. Trailer hitches are furnished on the pneumatic-tired units.

Further information may be secured from the company. Or use the Request Card bound in at page 16. Circle No. 937.

Portable Gas Torch

A heavy-duty portable gas torch for heating, drying, or thawing is now made by Hauck Mfg. Co., 126 Tenth St., Brooklyn 15, N. Y. Operating with compressed air at 40 psi or more, it burns manufactured, mixed, natural, propane, or butane gas, releasing from 325,000 to 1,300,000 Btu per hour.

The torch is built without coils and requires no preheating to start. Heats of 2,700 degrees F can be generated in any type of weather. Flame lengths are



This portable Hauck gas torch burns manufactured, mixed, natural, propane, or butane gas.

adjustable up to 18 inches on the smallest model, to 48 inches on the largest.

The torch is said to generate a clean, steady flame without clogging or forming carbon. Handle lengths range from 18 to 48 inches and the total weight from 7 to 28 pounds. Hose, nozzle, and support attachments are also available.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 921.

care to save a week's

TIME?



CURE WITH Fulco COTTON CONCRETE CURING MATS

Yes, Fulco mats can save you up to seven day's time over old-fashioned wetting methods — because they're all "set" to serve in 72 hours! Fulco mats stay wetter longer... cure concrete quicker, better, and cheaper. They increase the flexural strength of concrete by insulating against sudden temperature changes, and may be used again and again (making the cost per job negligible). The U. S. Department of Agriculture has proved conclusively, in field and laboratory tests, that cotton concrete curing mats cure concrete more effectively than any other method! See your equipment dealer for prices, or wire direct!

Fulton also manufactures sturdy, Fulton Triple Strength Tarps, Drop Cloths and Tents. Indispensable protection at economical prices.

Fulton BAG & COTTON MILLS

Atlanta • St. Louis • Dallas • Kansas City, Kans. • Denver • New Orleans
Los Angeles • Crystal, Minn. • New York City, 347 Madison Avenue

meeting
the need
for extra
width
with the

JAHN MODEL 410 WIDE PLATFORM TRAILER

The Jahn 410 Trailer is our answer to your problem of hauling extra wide equipment. Here is 8-feet of platform width to safely carry rolling stock from job-to-job.

The platform has been designed for easy loading with the rear half of the trailer sloped to a gradual incline... no more time consuming difficulties in getting your equipment aboard outmoded and unsafe trailers. The Jahn 410 is quick, safe and sure from loading to unloading. You owe it to yourself to know this unit better, so fill out the coupon and mail it today!

THERE'S A JAHN TRAILER FOR EVERY HAULING NEED



Tandem Axle Trailers

Tandem Axle-Tilt Trailers

Single Axle Trailers

PRESSED STEEL CAR COMPANY, INC.
Jahn Trailer Division
6 N. Michigan Ave., Chicago 2, Ill.
Dept. CEM



Dear Sir:
Send me literature on the Jahn 410 Wide Platform or any others I have checked.

☐ Tilt trailers ☐ Semi-trailers, Capacity

Name _____

Address _____

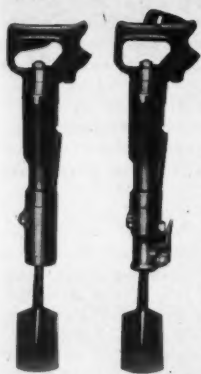
City _____ State _____

Yours for the Asking

Further information or descriptive literature can be secured from any advertisers in this issue of CONTRACTORS AND ENGINEERS MONTHLY. Just write name of manufacturer and product of interest to you on the extra line provided on the post card facing page 16, fill in your own name and industry connection, mail to us and we'll do the rest.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York 16, N.Y.



Inside - trigger or outside - trigger models of the Thor No. 16 pneumatic clay digger are available.

Pneumatic Clay Digger

A lightweight pneumatic clay digger has been announced by Independent Pneumatic Tool Co., 175 N. State St., Aurora, Ill. The No. 16 offers optional inside or outside trigger, closed retainer or latch retainer, and a choice of five chucks for square, hexagon, or combination hexagon and round shank steels.

The unit weighs 20 pounds, is 19½ inches long, and has a standard chuck to take steels with ¾-inch-square x 2¾-inch-long shanks. Optional chucks take ¾-inch hexagon x 2¾-inch shanks; ⅝-inch hexagon x either 2¾ or 3¼-inch-long shanks; and combination 0.882 hexagon and 1.027 round x 3¼-inch-long shanks. Accessories available in these shank styles include clay spades or scoops, flat picks, saw-tooth chisels,moil points, narrow chisels, and chisel blanks.

The new tool features a patented air-cooling system which circulates exhaust air through the front head for cooler handling, and blows muck and dirt from retainer parts, increasing their reliability and service life. The floating valve and fully air-cushioned piston are said to deliver up to one-third more power than previous models in the same weight class.

The two types of retainers are interchangeable and either one can be quickly locked in any of four positions for right or left-hand operation. The closed-type retainer features a one-piece rubber bumper to absorb impact shock. Port holes in the retainer dis-

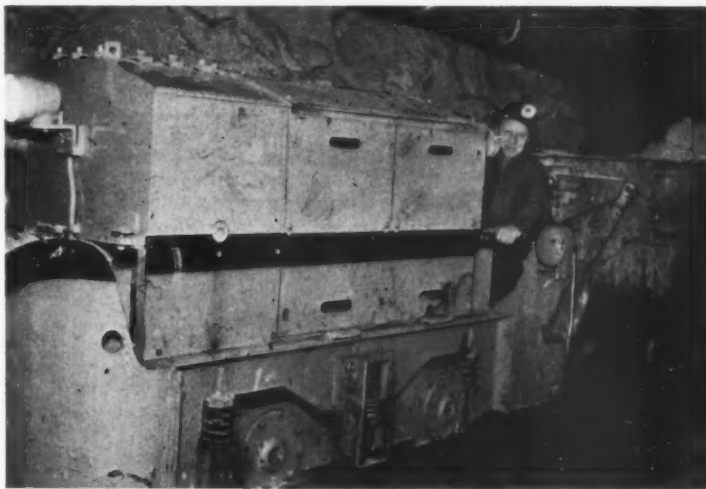
sipate heat as it is generated.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 851.

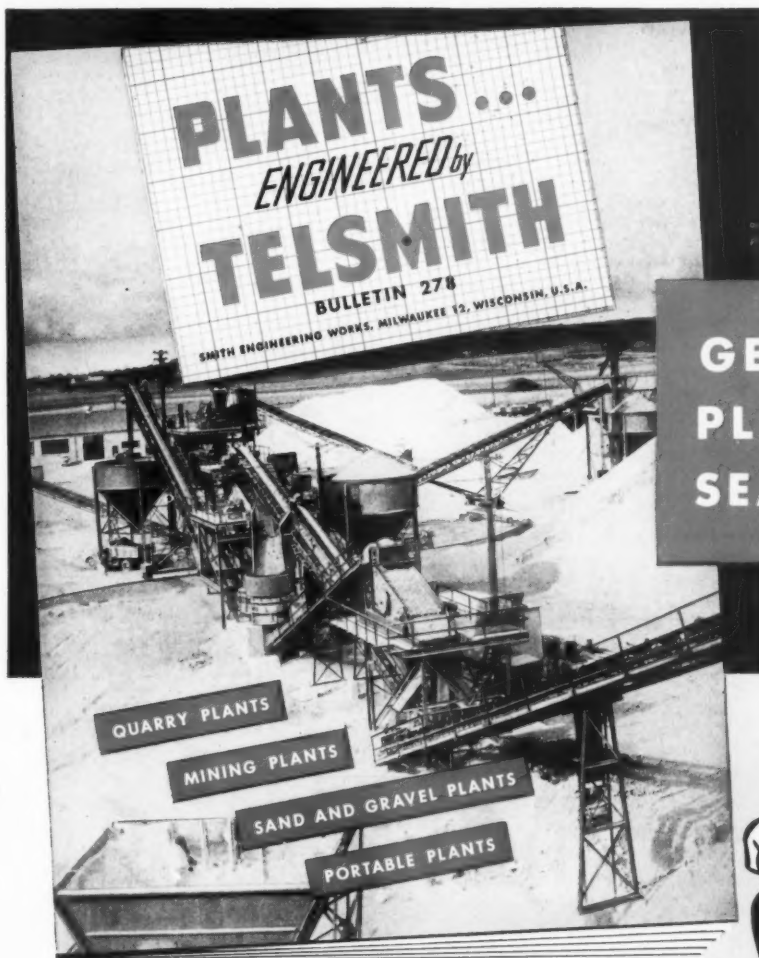
Herman C. Helmle Dies

Herman C. Helmle, Springfield, Ill., District Engineer of The Asphalt Institute, New York, N. Y., died on March 17 in Springfield.

Mr. Helmle, who had been with The Asphalt Institute since 1947, had spent nearly 30 years prior to that with the Illinois Division of Highways. It was during his career there that he developed the air bath which is now used in the determination of solid residues from road oils. Later his Highway Division work consisted chiefly of supervising inspection of bituminous construction, the proportioning of ingredient materials, and their actual preparation. Mr. Helmle brought this wide experience of highway development to the Asphalt Institute's promotional program in the midwestern area.



This new 45-hp diesel-powered locomotive is offered by Goodman Mfg. Co., Halsted St. and 48th Place, Chicago 9, Ill. It runs from 3¼ to 7½ mph and has a water scrubber to condition exhaust gases. Contact the company or use the Request Card that is bound in at page 16. Circle No. 857.



GET A
PLANT-SIDE
SEAT



★ Here's a plant-side seat for you—right where you can see photographically, some of the country's biggest, most successful plants—engineered for crushed stone, sand and gravel producers, for contractors, for mines. Of special interest is the complete, accurate data on plant capacities, types and sizes of finished products, and all the equipment—what kind, how it's laid out, and why. And you'll find out how you can get these same advantages in one complete service—a plant engineered by Tel Smith. Send for Bulletin 278.

HP-9

SMITH ENGINEERING WORKS, 4014 N. HOLTON STREET, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. 211 W. Wacker Drive Chicago 6, Ill. 713 Commercial Trust Bldg. Philadelphia 2, Pa. 238 Main Street Cambridge 42, Mass. Boeck Ept. Co. Milwaukee 3, Wis. A. N. Wigle, 294-6 N. Roosevelt Ct. Columbus 9, Ohio Clyde Ept. Co., Portland 9, Ore. & Seattle 4, Wash. • Mines Eng. & Ept. Co., San Francisco 4, Calif. • Interstate Equipment Co., Statesville, N. C. Rish Ept. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Wilson-Weemer-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

SAMSON BAR CUTTERS

- All Steel Construction
- Unbreakable Frame
- Easy Operation
- Immediate Shipment



Write for catalog of Metal Working Equipment

CAPACITY	No. 20	No. 23	No. 26
Rounds	¾"	¾"	¾"
Squares	½"	¾"	¾"
Flats	2"x¼"	2½"x5/16"	2½"x¾"
PRICE	\$47.15	\$63.00	\$72.00

f.o.b. New York, subject to change

JULIUS BLUM & CO., Inc.

196 West 22nd St., New York 11 • WATKINS 9-7042

Safe Jobs Not Won By Shaking Big Stick

Good Superintending, Job Training, and Weekly Meetings
Are the Best Way to Stop Accidents

• IT looks as if this year will be a safer year in the construction industry. Judging by the turnout at the 22nd Annual Meeting of the Greater New York Safety Council, contractors want safer jobs. They know a safe job pays dividends. What they came to the meeting for was to find out how to make jobs safe. And three of the best safety men in the country were on hand at the construction session, April 1, to tell them how.

The first speaker was Raymond J.

Thuon, Secretary of Cooney Bros., Inc., Tarrytown, N. Y. For the 150 men or so gathered in the Keystone Room of the Statler Hotel he described hazards of highway construction and maintenance—and how to overcome them. Walter J. Friederich, Executive Vice President of A. Friederich & Sons Co., Rochester, N. Y., told the group how his company had turned a 20 per cent insurance penalty into a 25 per cent credit—company safety councils were the key. George O. Carter, Safety Engineer for Zurich General Accident & Liability Co., Salt Point, N. Y., spoke of ways to make safety training a part of the general work program.

Job Hazards on Highways

According to Mr. Thuon, snakes are just one of the hazards that plague highway contractors. He told about one job—less than 50 miles from New York City—where they caught and killed 35 copperheads and 15 rattlers. There were no "bites" on this job, but on a nearby job a rattler did strike a man. The contractor had wisely provided a snake-bite kit, though, and a fatality was avoided.

Every job is loaded with hazards, Mr. Thuon told the group. In storage yards, equipment is constantly moving around; machines are being repaired, loaded, parked. Out on the road it's no better. In fact, a new hazard looms up—the motorist. The only cure for this hazard is good flagmen, he said.

You've got to train workmen to spot an accident before it happens, Mr. Thuon explained. They have to realize that even the lowly scythe can be a death-dealing weapon. Burning brush and weeds can cause burns and eye injuries, and the fumes of burning poison ivy can be fatal. Trenches should always be properly shored and rock cuts scaled down, he said. Back at the yard, materials should be neatly stacked and should rest on a firm level base. Mr. Thuon pointed out that having a trained first-aid man in every crew is one of the

best ways to reduce severity rates. Supplied with proper first-aid equipment, this man keeps minor injuries minor.

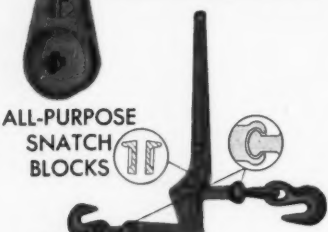
Safety programs, said Mr. Thuon, start at the top. Management must set the ball rolling and keep it rolling. Co-operative foremen and superintendents will pass the word along and see to it that the workmen follow safe practices.

In Cooney Bros., men in all phases of the work serve on the safety committee. These men elect their own chairman. They handle the entire program: pass out safety bulletins, act on suggestions of the workmen for safer practices, and hold regular safety meetings. The committee membership is changed every

(Continued on next page)



**TOOLS
YOU CAN
DEPEND ON!**



All LeBus Tools are designed by capable engineers and drop forged from alloy and high carbon steels in one of the most modern die-making and forging plants in the country. These tools are given a full pull strength test before they leave the plant, which guarantees these units against failure in the most rugged service.

"BUY FROM YOUR SUPPLY STORE"

**WRITE
FOR
COMPLETE
LITERATURE**

**LEBUS
ROTARY TOOL WORKS
INCORPORATED**
P. O. Box 2352 L. D. Ph. 5
LONGVIEW, TEXAS



SPEED CONCRETING... the WYANDOTTE way!

Low-cost method assures high early strength, faster setting with Wyandotte Calcium Chloride in the concrete.

HOW: Easy mixing two ways!

1. Add dry flake calcium chloride to the aggregate, or—
2. Dissolve in water (4 lbs. per gal.) and put solution into mixer with mixing water.

TABLE OF QUANTITIES

TEMPERATURE	Above 70°F.	32°-70°F.	Below 32°F.
CaCl ₂ per sack of cement:	1 lb.	2 lbs.	3 lbs.

WHY: Wyandotte Calcium Chloride gives:

- A—300% greater strength at 40°F. in 24 hours... a necessity at temperatures below 50°F.
- B—145% more strength within 24 hours at 70°F... a decided advantage above 50°F.

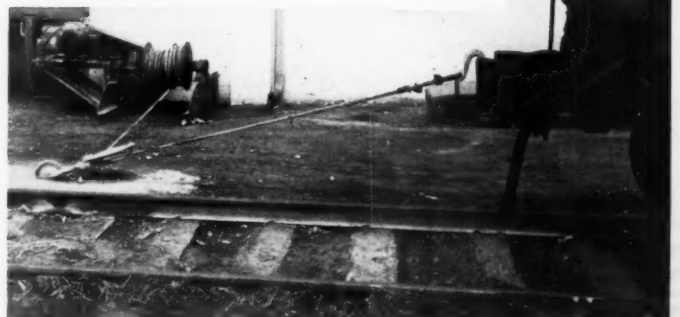
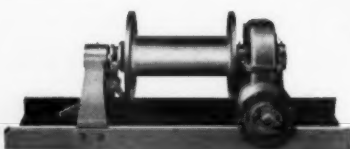
Ask your Wyandotte representative how calcium chloride can give you substantial savings in time and money, or write—Wyandotte Chemicals Corporation, Wyandotte, Michigan.

Wyandotte
**CALCIUM
CHLORIDE**

TULSA POWER WINCHES

FOR Special Purposes

Whether your job is lifting, pulling, loading or hauling, it can be better, easier and more safely handled with a Tulsa Winch. Tulsa Winches for trucks and crawler tractors are equipped with automatic worm brake designed to hold the load suspended. Load can be lowered only by using power. Highest quality materials and precision workmanship assure you of long, trouble-free efficient service. Tulsa Winches are available in capacities from 6500 to 80,000 lbs. For additional information and illustrated literature showing how you can profit with Tulsa Winches, see your nearest Tulsa Winch distributor or write direct to the manufacturer.



This Model 10 Tulsa Winch is used by a commercial chemical fertilizer manufacturer to spot freight cars for loading and unloading. It is powered by an electric motor and does not use lever controls.

Tulsa Winch
TULSA, OKLAHOMA
DIVISION OF
VICKERS INC.

*Reg. U. S. Pat. Off.

815-19 E. First St.

phases of
committee.
chairman.
ram: pass
suggestions
actices, and
The com-
enged every
ge)

quarter-year to obtain a wider interest in the program. The result, said Mr. Thuon, is fewer accidents, lower insurance costs, and higher job profits.

Company Safety Councils

Walter J. Friederich, second speaker on the program, frankly admitted that high insurance costs were the first thing that got his outfit safety-conscious. Back in 1925 they had three fatal accidents. The accident rate in '26 and '27 was high too. All this contributed to a whopping 20.7 per cent penalty on insurance costs.

Company officials sat down and talked the problem over with the New York State Insurance Fund representative. The result was a company safety council, formed in 1928. The council was made up of superintendents, foremen, timekeepers, and anyone else who wanted to work for safety. The idea has gone a long way in the past 25 years. Many new projects have been added to the council's work.

The monthly meetings are one of the

best means of getting a safer job, according to Mr. Friederich. They include reports on job conditions during the past month, a talk on some phase of safety, and often a movie on safe job methods. The reports on job conditions are taken from the weekly inspection reports. Mr. Friederich explained that these reports list some 30 questions pertaining to the safety of the work in progress; the super can answer most of them with a simple yes or no. In case there were any skeptics in the audience, Mr. Friederich explained the reasoning behind requiring these reports. "They are a constant safety reminder for the supervisory personnel," he said. "Say, for example, that one of the questions asks if all guardrail is in place. The foreman may recall a piece or two that's missing. Maybe he forgot to attend to it, but before he writes yes on the paper, he'll go out and see that the rail is put in place."

Another value of the reports, according to Mr. Friederich, is the oral explanation that each foreman has to give

of any accidents that occur on his work. This is given during the meeting and the reason for the accident is usually obvious to all of the men. The razzing they give one another is an added incentive for keeping a clean job.

Large signs showing the safety record of the project are posted on each site as a part of the over-all program. As the number of days without an accident increases, the men are more care-

ful than ever to keep the record going up.

Has the program paid off? It certainly has. The company's insurance premium rate for 1952 shows a 24.7 per cent credit, compared to 20.7 penalty when the program was started. "This was enough to get us at least one job we would have been second-best on in the past year," Mr. Friederich said. He

(Concluded on next page)

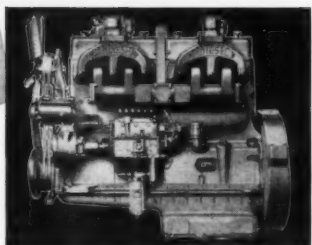
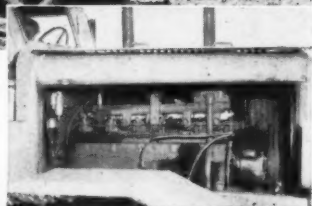


**PAYLOAD
POWER**

WAUKESHA

Diesel

WAKD Super-Duty DIESEL
—Six cylinders, 6¼-in. bore x
6½-in. stroke, 1197 cu. in. displ.



• Where the digging is toughest and where the hauling is heaviest, and hardest... where turns twist, and grades are steep and stiff—Waukesha Super-Duty Diesels take the jobs through, and come back for more. The truck shown hauls an average payload of 30 tons at an elevation of 6400 feet from a quarter to a half mile 16 hours a day. It makes about 38 trips a day. Waukesha has put all this payload performance into its Diesels—by 25 years of Diesel development and research—with many exclusive Waukesha features. The patented spherical combustion chamber controls combustion to meet operation needs—giving the engine lively responsive acceleration, smoothness and complete clean burning for high fuel economy and low maintenance. For the *how* and *why* Diesel details, send for Bulletin 1415.

174

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
New York • Tulsa • Los Angeles



On the job... and on the bond Experience Counts

Moving mountains of earth is a particular skill of the American contractor... a skill born of initiative and matured by years of broad experience...

Experience makes for expertness — not only in the great American construction industry, but in the related field of contract bonding...

Experience, acquired through long association with many of the nation's leading construction firms, enables The Aetna Casualty and Surety Company to provide prompt, intelligent contract bond service on jobs of any type and size... anywhere in the country.

No Job
too Big

— No Job
too Small



AETNA CASUALTY AND SURETY COMPANY

The Aetna Life Affiliated Companies write practically every form of insurance and bonding protection

LIFE AND CASUALTY FIRE AND MARINE
Aetna Life Insurance Company Automobile Insurance Company
Aetna Casualty and Surety Company Standard Fire Insurance Company
Hartford 15, Connecticut

Check the Red Request Card!

For further information on the new equipment, new materials, and new literature described in this issue of Contractors and Engineers Monthly, check the item number on the Red Request Card bound in at page 16. No obligation, of course, and we will forward your request directly to the manufacturer.

Contractors and Engineers Monthly
470 Fourth Avenue, New York 16, N. Y.

Safe Jobs Not Won By Shaking Big Stick

(Continued from preceding page)

also mentioned awards the company has received for no-time-lost jobs in the state. "Right now there are half a dozen of our jobs in progress without lost-time accidents", he said. The jobs run from \$500,000 to \$1,500,000 each and have been in progress from 250 to over 500 days.

Mr. Friederich emphasized the importance of the spirit behind the safety program. The mechanics of the program have great worth, he said, but the wholehearted cooperation of the men has even greater worth. If the idea of safety is repeatedly pounded home, it stays in the mind of each man on the job, he said. Each is made to realize that accidents do not just happen—they are caused by the human element—and that the longer a job has gone without an accident, the closer it is to the next one.

Safety Training

George O. Carter, third speaker on the program, suggested that workmen be given safety training on their first job. There is no reason, he said, why an apprentice shouldn't be instructed in safety as he first begins to practice his trade. Safety then becomes an integral part of the work program.

According to Mr. Carter, trade unions can play an important part in this program. If a uniformly high standard of safety were set during the apprenticeship period, every worker hired would be a safe worker. The mining unions are now undertaking this type of program, he said, but it should not be necessary for the construction industry to have the mining industry's high incidence of accidents before it takes action.

Mr. Carter reported that 7 out of 10 accidents can be prevented—two by more attention to machinery and five by controlling the human element. Because the human element is so important, you've got to work with the men, he said. When a contractor wants a safe job and takes an active interest in his safety program, the superintendents and foremen will carry the program through to the workmen. A "big stick" attitude with its harsh enforcement of all details is not the best way to get a safe job. On the other hand, said Mr. Carter, safety training on the job as a regular part of the work, a cooperative attitude by supervisory personnel, and planned safety meetings will make your job a safe one.

Industrial Lubricant

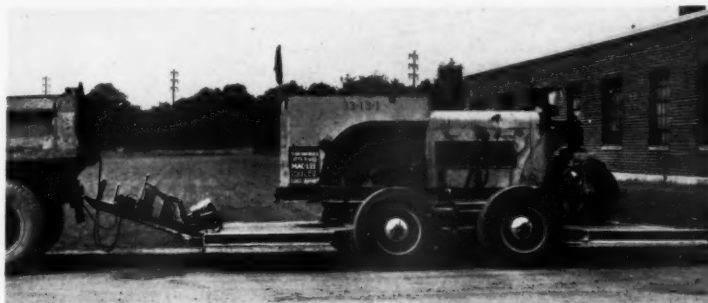
Resistance to temperature, water, and corrosion are major features of a new industrial lubricant developed by Southwestern Petroleum Co., Fort Worth, Texas. Sotol, reports the company, will not melt at 1,000 degrees F or harden at zero temperatures. It is formed by adding oil and other organic compounds to a synthetic base, and is packed in 40, 110, 235, and 435-pound units.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 952.

A Lift-Up Trailer

A trailer on which equipment may be loaded at ground level and then elevated to carrying position is made by Mac-Lee Trailer Co., Celina, Ohio. The unit was designed and engineered by United Development Corp. of Akron. Accessible at either end, it is raised by three hydraulic cylinders, one on each wheel assembly and one on the tongue.

The 5-ton trailer is 8 x 16 feet and has a road clearance of 13½ inches. Power for the hydraulic system is derived from an electric pump connected



The Mac-Lee trailer, shown here in "up" position, is loaded at ground level, then raised by three hydraulic cylinders. It can be towed from either end.

to the prime mover's electric circuit. Mechanical locks on the tongue and wheel-arms hold the unit in the "up" position. Locking at intermediate levels

is done by hydraulic valves.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 904.

Folder on 27-Yard Scraper

A new folder on the No. 90 scraper is issued by Caterpillar Tractor Co., Peoria 8, Ill. It gives complete specifications and illustrates mechanical features. The unit has a struck capacity of 21.2 yards and a heaped capacity of 27 yards. Cutting edges are self-sharpening and reversible for long service. The large rear tires are 27.00 x 33 and the fronts are 24.00 x 29.

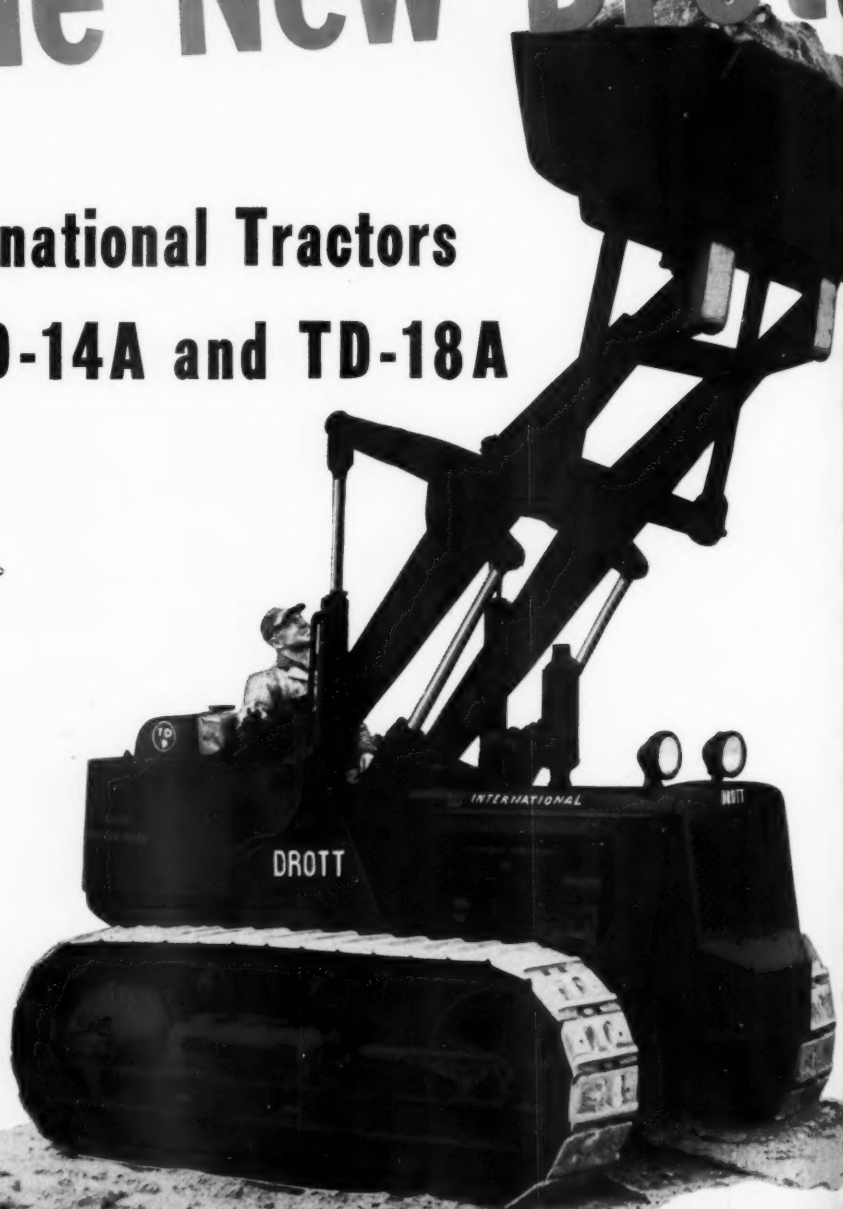
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 933.

best loader built!

The New Drott

For International Tractors

TD-9, TD-14A and TD-18A



See your International Industrial Distributor or write

Chemical Warfare On Roadside Weeds

Herbicides Promote Economy, Safety, and Public Relations, Says Highway Official; Utility Companies Must Cooperate

• IN most highway departments the use of herbicides has barely passed the experimental stage, though there is ample evidence to show the kind of job these materials can do on roadsides. All the more reason then, thinks Wesley L. Hottenstein, Chief Highway Forester of

the Pennsylvania State Highway Department, to take a long and careful look at herbicide spraying. Mr. Hottenstein, in a paper at the Sixth Annual Weed Control Conference in New York City, described the weed war his Department is fighting with herbicides.

Economy, Safety, Public Relations

There are at least three potent reasons, he said, why highway departments should examine the merits of herbicide spraying. First, it is economical. It saves the cost of mowing weeds and brush within right-of-way limits. In Pennsylvania, for instance, topography and construction standards have made a great deal of hand mowing necessary; thus labor costs have been raised—if, indeed, enough labor could be found to tackle the job at all.

Safety is another factor of great importance, with regard to both the men engaged in mowing operations and the general public. Poison ivy has increased tremendously along Pennsylvania highways in recent years and, until spraying was introduced, it was the cause

of many lost man-hours and days.

Third, good public relations should not be overlooked. Every motorist who finds that he can drive along a neat highway, get a good view of the scenery, and picnic without worrying about poison ivy, is sure to be pleased, and his pleasure contributes to good public relations between the highway department and the public. To paraphrase the military saying "Communications can't win a battle but it can lose one", Mr. Hottenstein suggested that good public relations can't build highways, but lack of it will certainly interfere with progress.

State Program Gets Under Way

Pennsylvania's Chief Maintenance Engineer was fully alive to the benefits of a herbicide program, and in the summer of 1949, said Mr. Hottenstein, the first experiments with chemical spraying were made at a number of locations in several districts to include various species and sizes of plants growing under different conditions.

Types of Weeds Attacked

Poison ivy is the worst menace in Pennsylvania, and this was the weed picked on by the sprayers for their most concentrated efforts, which, incidentally, earned them much praise in the local press. Experience showed that a kill of more than 90 per cent could be effected with a single spraying, but a second application was needed to eradicate those plants originating from seed and those which had survived the initial spraying. This result suggested that an effective procedure for complete eradication would be two applications during a period of two years.

Other weeds, too, have succumbed to the onslaught of the spray guns: Canada thistle, horse nettle, wild mustard, ragweed, mullein, pokeweed, chicory, Hall's honeysuckle, and other aggressive woody species. Herbicides have also been found profitable in areas adjacent to signs, guardrails, tops of fill slopes, bridges, culverts, and other spots hard to get at with mechanical equipment.

The Spray

The preliminary applications made in 1949 were composed of limited quantities of 2,4-D and 2,4,5-T combined. So encouraging were the results that a greatly expanded program was planned for 1950 and 1951. In each of the past two years approximately 375 gallons of herbicide were applied, the spray containing equal parts of 2,4-D and 2,4,5-T, with 2 pounds acid equivalent of each per gallon. The Pennsylvania Department of Highways specifications provide for an ester-type formulation of low volatility. The concentrate must be readily emulsifiable with water, diesel or fuel oil, and similar petroleum-carrying agents.

Application rates in spraying operations have varied from 90 to 200 gallons per acre, depending on the height and density of vegetation, with an average of 150 gallons.

Application Methods

Power sprayers of 200-gallon capacity and knapsack-type 5-gallon-capacity tanks are the weapons in the offensive. The power sprayers are, of course, the most economical method of dealing with large and generally continuous areas. Pennsylvania roadsides, however, have many small scattered patches of objectionable vegetation in hard-to-reach places, and it is here that the knapsack tanks have been so useful. An operation of this type can be efficiently conducted with a two or three-man crew and a foreman equipped with a pickup truck, 50-gallon drum, and several spare spray tanks.

Care must be taken, warned Mr. Hottenstein to prevent damage to sensitive crop plants either by "drift" or by

(Continued on next page)

Skid-Shovel

Here's why...

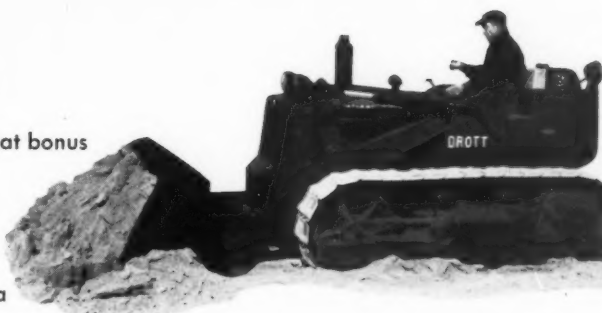
Drott's patented Break-Out Action never lets that bonus loadage slip off the bucket. Break-Out Action pulls the bucket back **before** it is lifted from the ground. The load is pried back over the shoes and a heaping bucket is a sure thing at every pass. The tremendous prying force is directed into the ground—not onto the tractor.

The load is transported on the shoes, relieving the tractor of "carry strain" and giving the operator excellent visibility. Shoe Transportation keeps the entire unit in perfect balance.

Another Drott first is the Hydro-Spring, a super shock-absorber that reduces hydraulic shocks by two-thirds. It also absorbs a high percentage of your maintenance costs.

Low Overall Height permits working in confined areas, and when that extra stretch is needed, you'll find that the Drott Skid-Shovel has Higher Lift and Farther Pitch than any other loader in the same capacity range.

Compare these features. You'll find that the New Drott Skid-Shovel is the best loader built.



Write Drott Manufacturing Corporation • Milwaukee • 8 • Wis.

Chemical Warfare On Roadside Weeds

(Continued from preceding page)

thoughtless spraying. Thanks to the precautions it takes, his Department has received no complaints about the spraying done by its own crews.

Costs

As regards the expense involved in herbicide spraying, Mr. Hottenstein puts it between \$20 and \$100 an acre, depending on availability of water, distance separating areas to be treated, and type of vegetation. Power-spraying costs are approximately one-third to one-half of those incurred by hand spraying. Of course applications on small and scattered patches cannot be undertaken with power equipment. But costs with either type of equipment are lower than hand mowing.

Utility Companies' Part

Mr. Hottenstein drew attention in his

paper to the fact that a state highway department sometimes gets blamed by the general public for careless herbicide spraying when in fact the fault lies with utility companies whose lines are constructed on or immediately adjacent to state highway right-of-ways. He cited some examples of their carelessness, such as spraying dense stands of large saplings in midsummer along heavily traveled highways. This is bound to invite severe public criticism, he said. Partial spraying of the crowns of large trees is bad, too, since it causes one side of the tree to look as if it had been scorched by fire. If the large growth had been cut prior to spraying, offense to public opinion could have been avoided.

Early in 1951 the Pennsylvania Department of Highways, on account of the negligence shown by a few utility-company operators, drew up some rules and recommendations designed, as far as possible, to set uniform standards and avert justifiable criticism. The rules are as follows:

1. Prior to issuing a permit for any chemical spraying, a properly qualified official of the Department of Highways and an official representative of the company receiving the permit shall investigate the proposed work.

2. A copy of the approved permit must be in the hands of the foreman at the time the work is being done.

3. Before spraying, all saplings over 8 feet in height shall be cut down and removed. (The sprout growth can be treated during the following year with reasonable assurance of effective results. In any case, since small young growth can be eradicated more effectively and economically than larger

(Concluded on next page, col. 2)



MECO Surface Seal Protects Blacktop Pavements!

(Tested successfully against jet fuels and fire)

You can make better blacktop installations with MECO Surface-Seal. Contractors know that MECO seals, renews and tightens the surface, as well as beautifying the pavement. It is particularly useful on areas which take a lot of punishment. Gas stations, parking lots, airports and private

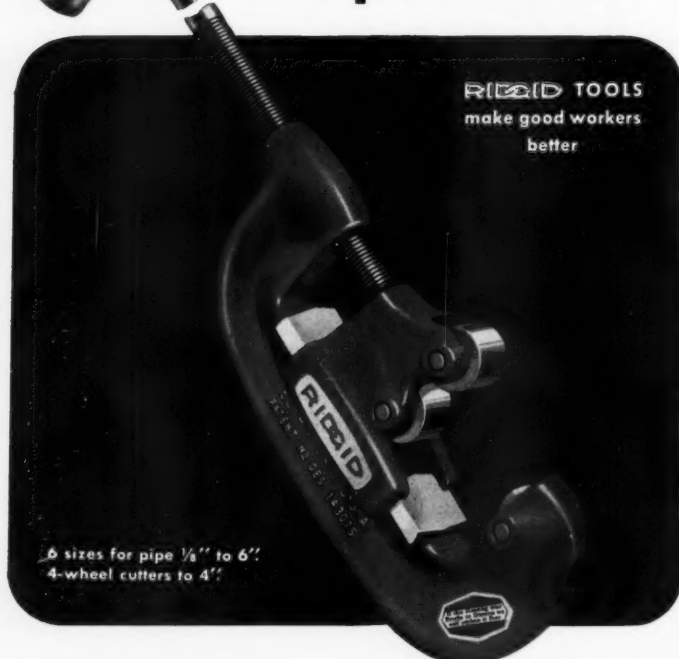
driveways use it because it is weather and solvent proof.

Economical and easy to use, MECO Surface-Seal will give you a better job on your next blacktop contract. Makes old driveways new—makes new jobs last longer. Write for folder and names of satisfied users. Distributors in all major cities.

Maintenance Engineering Co. 16 West Johnson Street
Philadelphia 44, Pa.

Why Skilled Workmen Insist On

RIGID Pipe Cutters



RIGID Heavy-Duty Cutters assure you extra quick easy pipe cutting

- ★ High alloy thin-blade cutter wheels roll quickly through pipe with least effort—clean, almost burrless cuts.
- ★ Special malleable housing guaranteed warp-proof, assures perfect tracking of cutter wheel—every tool factory tested.
- ★ Efficiency-balanced design for quick easy work—made for long hard service.
- ★ Order from your Supply House.

THE RIDGE TOOL COMPANY, ELYRIA, OHIO



You're burying
your money's
worth . . .



when you specify

WARREN CAST IRON PIPE

You can be sure you get 100 cents to the dollar when you plan your piping system around WARREN Cast Iron Pipe and WARREN Cast Iron Fittings.

WARREN Cast Iron Pipe is produced in all sizes from 2" to 84" with all types of joints . . . fittings in numerous non-standard patterns to meet unusual requirements.

**STRENGTH . . . TOUGH-
NESS . . . RESILIENCY . . .
MEAN MAXIMUM LIFE!**

"BUILT TO BE FORGOTTEN"

Warren FOUNDRY & PIPE CORP.
55 LIBERTY STREET, NEW YORK 5, N. Y.

Bell & Spigot Pipe • Flange Pipe • Mechanical Joint Pipe
Flexible Joint Pipe • Short Body Bell & Spigot Specials

WARREN PIPE CO. OF MASS. INC. 75 FEDERAL ST. BOSTON, MASS.

95 Years of Continuous Service

ings over
down and
h can be
year with
ective re-
all young
ore effec-
an larger
ol. 2)



! is weather-
se, MECO
better job
contract
makes new
folder and
istributors
on Street
4, Pa.



The Sterling Steel Casting Co.'s one-unit roller for crawler tractors comes completely assembled

Single-Unit Roller

Production of a new one-unit roller for crawler-type tractors is announced by The Sterling Steel Casting Co. of East St. Louis, Ill. It comes completely assembled including bearing adjustment and lubrication. A seal is used to keep out foreign material.

Timken bearings for long friction-free operation are included, assuring 1,500 hours of continuous operation before more lubrication is needed. In addition, an exclusive Sterling locking device assures bearing adjustment and alignment at all times, the company claims.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 926.

Inter-American Cyanamid

A new corporation, Chemical Construction (Inter-American) Ltd., has been formed as a subsidiary of American Cyanamid Co., New York, N. Y. Its main offices will be in Toronto, Canada, and the firm will design and build chemical plants in all nations of the Western hemisphere except the United States. Its operations will parallel those of Chemical Construction Corp., another Cyanamid unit, which designs and builds chemical plants in the United States and throughout the world.

W. R. Geddes is President of the new company.

Chemical Warfare On Roadside Weeds

(Continued from preceding page)

material, treating such growth before it reaches 8 feet in height is advisable.)

4. Slopes and other areas subject to severe erosion, now covered with protective vegetation, shall not be sprayed.

5. Spraying of desirable vegetation, regardless of origin, which does not constitute a hazard to the operation of utility lines, is prohibited.

6. Permittee shall exercise caution when operations require that spraying equipment be dragged along the highway, so that desirable vegetation is not killed as a result of residues adhering to equipment parts.

7. In order to lessen public criticism, as much as possible of the spraying shall be done in the dormant period between August 15 and April 15. This is of particular importance along highways in rural areas of high scenic value and in forested sections where the recreational factor is significant.

8. Desirable vegetation destroyed or seriously damaged as a result of carelessly or accidentally applying a chemical spray shall be replaced, or the Department of Highways shall be reimbursed by the permittee, or his official agent, in the amount of the replacement value.

9. In granting permits, the Department assumes no responsibility for damage to private property caused by drift, etc., from spraying.

10. Traffic must be maintained at all times with as little interference as possible and every precaution taken for its safety.

11. Permits will be revoked upon failure to comply with these regulations. Future permits will be withheld until such jobs, not completed in an approved manner, are corrected to the satisfaction of the Department.

Mr. Hottenstein concluded by saying that haphazard methods are costlier and less effective than carefully thought-out programs, so why not gain the good will, confidence, and respect that accrue to good planning? He is of the firm opinion that herbicides are destined to play an increasingly important part in roadside-vegetation control, and that the friction points to which he refers in his paper are not so serious that they cannot be eliminated by cooperation and mutual understanding.

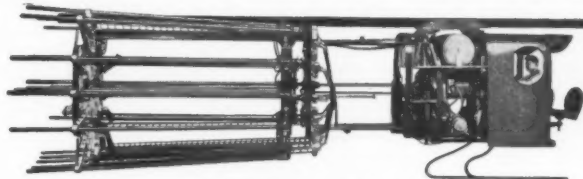
**INCREASE TUNNEL-DRIVING SPEEDS 80% and
REDUCE LABOR COSTS 92% with**

DEMO-CANON GANG DRILL

- Drilling Speeds of 7" to 36" per minute.
- Self Contained Power Plant.
- 28 Fully Automatic Electric Hammer Drills.

- Drills May Be Moved in Vertical or Horizontal Direction.
- Drill Speed Adjustable from 300 to 3,000 RPM.
- Push Button Type Controls on one operating Panel.

TWO MEN OPERATE 28 DRILLS



Write Today for full details

DEMO-CANON ENGINEERING AND MANUFACTURING CO., INC.
2215 S. Sepulveda Blvd., Los Angeles 25, Calif.

Look! It's Really Portable—

RIGID

"400" POWER DRIVE

**On
Wheels!**



Wheel legs and front handles available to convert your present "400" to wheel model; or legs and tray to make bench model into stand.

**Power for hand threaders, cutters, reamers
now easily rolled where you need it!**

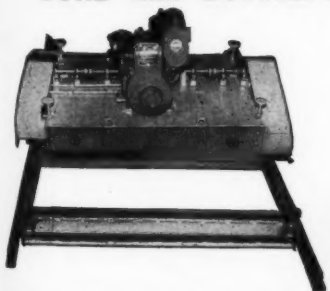
- ★ One man can easily wheel-barrow this popular RIGID power unit close to the work—think of the time and muscle saving!
- ★ And it stands still and delivers plenty of power—universal motor, forward, reverse, 1/8" to 2"—to 12" with geared tools.
- ★ RIGID design 3-jaw chuck, 6 adjusting pinions, one always handy; self-centering workholder in rear.
- ★ Sealed-in lubrication—no oil to spill.
- ★ See it, compare it—buy the unequalled "400" at your Supply House!

THE RIDGE TOOL COMPANY • ELYRIA, OHIO



PAVE SIDEWALKS

**Faster, Easier with DOTMAR
CURB and GUTTER PAVER!**



**Only 5 to 10 Minutes
for Walk Fronting
a 50 Ft. Lot
--UP to 72in. Wide**



Contractors, Municipalities, testify DOTMAR pays for itself in first mile of curb and gutter paved; proportionately in paving walks, highway widening strips and highway dividing curb. No face forms to set in curb work. Hundreds in use. Send for Dotmar Paver Bulletin 52.

Dotmar INDUSTRIES Inc.

519 HANSELMAN BLDG.

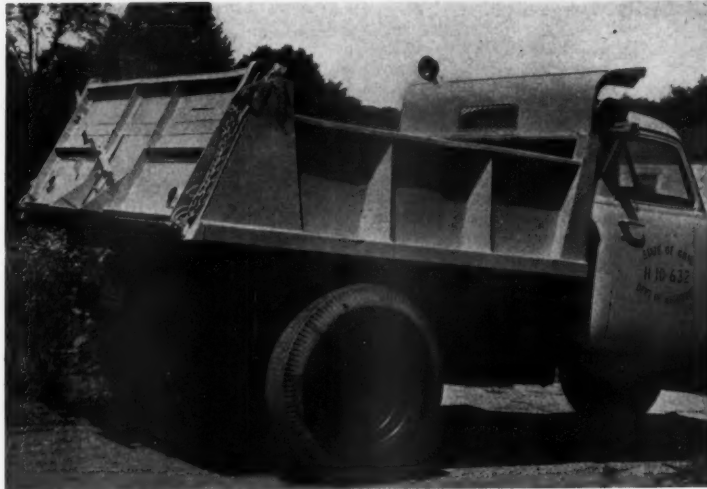
KALAMAZOO, MICH.

New Body Features A Sloping Tailgate

A new type of dump body for maintenance work has been developed by the Ohio State Highway Department together with the Galion Allsteel Body Co., Galion, Ohio. It features a sloping tailgate and greater front-axle payload.

In its experiments with the new body designs the Highway Department sought to eliminate the apron which had to be used on earlier models to prevent aggregate from spilling. Its final specifications called for a truck bed 6 inches longer on the floor and 6 inches shorter on the top, leaving the capacity the same but providing a sloping tailgate.

When axle concentrations of a full payload were tested on the new body, it was found that a greater percentage of the load was carried on the front axle, than when a conventional type body was used. This increase was desirable because the Department had



Ohio Department of Highways Photo

This is the new dump body developed in cooperation by the Ohio Department of Highways and Galion Allsteel Body Co. Its sloping tailgate does away with aprons; its greater front-axle payload keeps the front wheels from floating on up grades.

found that the front axle on the older models tended to leave the road on ascending grades.

The Department points out that the new tailgate gives the operator better control when applying aggregates. Also, when bituminous mixtures are being dumped, the sloping tailgate actually cleans itself. The 3-cubic-yard body is 78 inches wide and 20 inches high.

Further information may be secured from Galion. Or use the Request Card at page 16. Circle No. 931.

Technical Bulletin On Calcium Chloride

A technical bulletin on calcium chloride is available from the Solvay Sales Division, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y. It lists complete physical and chemical properties of the compound, gives information on unloading and handling both liquid and solid forms, and supplies standard ASTM specifications.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 887.

Data on Digging Attachment

A heavy-duty digging and loading unit which is attached to the rear of a Schramm Pneumatractor is illustrated in a new booklet prepared by Pippin Construction Equipment Co., Inc., White River Junction, Vt. The Model WS11 is tractor-powered and hydraulically operated.

As a backhoe, it can dig 8 feet deep with a 5-cubic-foot bucket. The company claims that the unit can be converted to a shovel in a matter of minutes. Backhoe buckets are available from 12 to 37 inches wide and the shovel bucket is 22 inches.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 954.

Dayton Appoints Blackwood

Fred H. Blackwood is the newly appointed Detroit-area District Sales Representative of the Dayton Pump & Mfg. Co., Dayton, Ohio, manufacturer of the Rapidayton line of water systems and gasoline pumps. Mr. Blackwood will make his headquarters in Detroit and will cover southern Michigan and northern Ohio.

This You've Got to See!

...it's a
**HYDRO-
TRENCHER**



...it's a
**SWING
LOADER**



Here's the most useful tool ever to hit the construction industry... the improved Model 51-B Oliver-Ware Hydro-Trencher. You can dig deeper, up to 10 feet... load higher, up to 12 feet... with more power in any kind of going.

Just compare these great features with any conventional backhoe:

Completely hydraulically operated and controlled. You get hydraulic down pressure on the boom to force the bucket into the ground for a fast, full load. Hydraulically controlled bucket gets the load out fast.

Hydraulically controlled stabilizing blade allows operation from a level position... holds tractor firmly in place. Blade can also be used for backfilling.

Exceptional mobility. The unit moves easily from job to job under its own power, and upon arrival is ready to dig.

Exclusive dipper stick construction permits you to clamp and remove rocks larger than the bucket itself. In fact, you can go to the other extreme and actually bail water.

AND, the Hydro-Trencher is Quickly and Easily Converted to an Efficient Swing Loader.

Simply remove 5 pins and turn the bucket around. No extra parts are required.

For the complete story on the Improved Oliver-Ware Hydro-Trencher, see your Oliver Industrial Distributor.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel
and crawler tractors



THE OLIVER CORPORATION
19300 Euclid Avenue
Cleveland 17, Ohio

Please send me informative literature on The Improved Model 51-B Hydro-Trencher.

Name.....

Company.....

Address.....

City..... Zone..... State.....

CHEMICAL WEED CONTROL

32-PAGE BOOKLET...

AVAILABLE FREE. Includes information on various recommended weed killers... directions for weed, grass and brush control... illustrations and data on various weeds... other valuable information applicable to practically all weed problems. Write today!

CHIPMAN CHEMICAL CO.
Dept. C, Bound Brook, N.J.

Manufacturers of

CHIPMAN WEED KILLERS

CHLORATES
2,4-D

ARSENICALS
2,4,5-T

the older road on that the or better gregates. ures are tailgate 3-cubic and 20

secured Request 31.

chloride

calcium Solway al & Dye k 6, N. Y. chemical gives in- handling and sup- tions.

ined from e Request 87.

chment

d loading rear of a illustrated by Pippin Co., Inc. The Model d hydrau-

feet deep The com- be con- matter of are avail- de and the

ained from e Request 954.

ckwood

newly ap- rict Sales on Pump & nufacture- ter systems Blackwood in Detroit chigan and

AL D L

LET...

des infor- mmed tions for ntrol ... n various nforma- tically all day!

AL CO. N.J.

AN ERS

NICALS 5-T

Insulated Wall Panels Lower Building Costs

Laminated Concrete Units Are Cast In Steel Forms, Trucked to the Job, And Placed by Cranes

• INSULATED precast-concrete wall panels are being used in what will be one of the nation's largest industrial plants, and are said to be saving as much as one-third the cost of 12 inches of brick masonry.

The panels were developed as non-load-bearing walls. They are 5 inches thick and are of laminated or sandwich construction in which 1½ inches of rigid insulation separates interior and exterior layers of concrete each 1¾ inches thick. They are cast in steel forms by a production-line method, trucked to the job, and put in place by cranes.

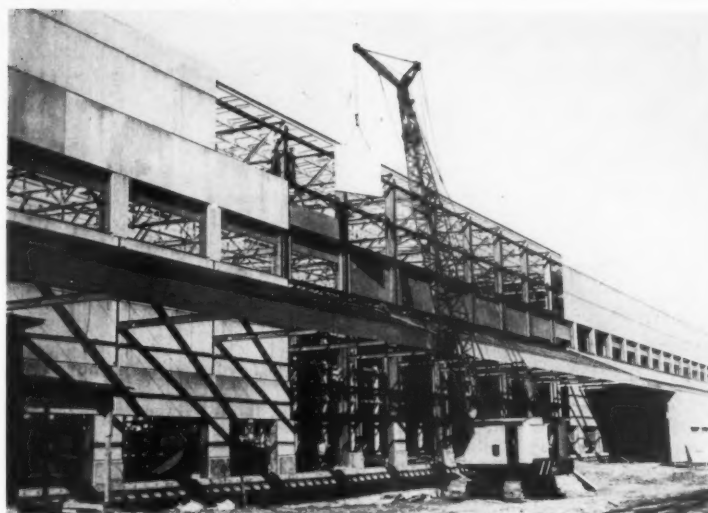
Used on Ohio Plant

Marietta Concrete Corp., Marietta, Ohio, is producing these precast-concrete wall panels for Union Carbide & Carbon Corp.'s Electro Metallurgical Division plant at Marietta. Several buildings in this \$100,000,000 plant-expansion program have been completed. The original one was a steam power station with about 60,000 square feet of insulated precast-concrete wall panels. As a result of experience with this structure, more contracts for 500,000 square feet of panels for other buildings were awarded to Marietta Concrete Corp. One of the largest, a furnace building 660 feet long and 70 feet high, with all exterior walls of precast panels, has already been completed. Several furnaces were placed in operation while the exterior panel walls of this building were being put into place.

Basic Sizes

Typical panels come in two basic nominal sizes—8 x 8 feet and 8 x 10 feet—with specials as required. They are cast in steel forms with a tolerance in dimensions and warping of plus or minus 1/16 inch. They are made square, or nearly square, to equalize shrinkage in both directions. The larger panels are used whenever possible to reduce the actual length of joints to a minimum. Because the panels are 5 inches thick, compared with a 12-inch brick wall, they add a 7-inch-wide strip of floor for plant use around the perimeter of the building.

All panels are uniform in appearance and color. Specifications require that all cement, aggregate, and water be obtained from the same source. They also require that the concrete have a minimum strength of 4,000 psi at 28 days and at least 3½ per cent and not more than 4½ per cent of entrained air. In 7-day tests, results have averaged 4,300 psi; consequently, few 28-day tests have been required. The concrete has



Marietta precast-concrete wall panels are set in place at a new Marietta, Ohio, plant of Union Carbide & Carbon Corp. They are said to save one-third the cost of 12 inches of brick masonry.

a slump between 2½ and 3½ inches and is made with high-early-strength cements (6 bags per cubic yard) and ¾-inch maximum-size aggregate.

A 4 x 4-inch No. 10 wire mesh is embedded in each layer of concrete. The mesh is procured in flat sheets to insure a uniform 1-inch concrete cover, and slab bolsters with galvanized tips support the bottom layer of mesh to prevent rust stains on the finish face of the panel. The two layers of concrete are tied together with strips of expanded metal bent to form 2½-inch channels. These ties also serve as spacers for the sheet of insulation that separates the two layers of concrete.

Handling Panels

The panels are cast by Marietta with two U-shaped metal lifting hooks recessed into their top edges. The hooks make it easy to handle the panels and place them so they can be bolted directly to the steel frame of a building. The panels are erected directly from

(Concluded on next page)

25-50% MORE CAPACITY with KUE-KEN*

Kue-Ken Crushers Offer the Only Successful New Jaw Crusher Design in 90 Years

25-50% More Capacity with Kue-Ken

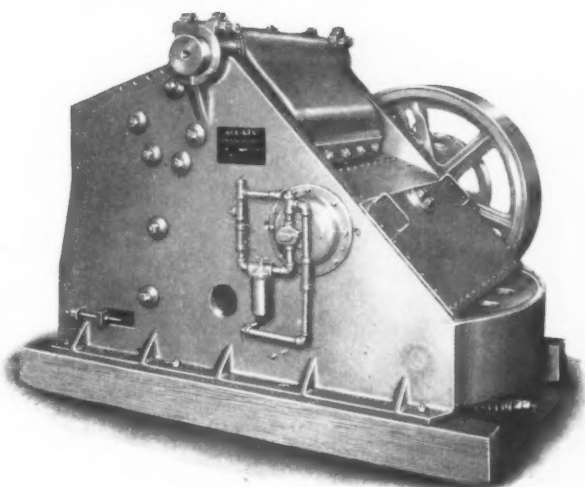
Yes! this is true. Kue-Ken Crushers operate at normal speed of 375 crushing strokes per minute. This is 25-50% faster than any other crusher . . . gives 25-50% more capacity. Higher speed makes finer, more uniform product. Meets states' specifications easier. Kue-Ken's exclusive principle of "Crushing without Rubbing" gives 5-10 times longer jaw plate life, more capacity on less power.

Modern Design

Kue-Ken banishes forever the grease cup and oil can. Kue-Ken operates with "crankcase type" sealed-in, filtered oil, pressure lubrication system. Change oil only twice a year. Automatic protection against tramp iron. Safety device instantly releases fly wheel, quickly, easily reset. No breaking or shearing parts.

Let Kue-Ken Work for You

There is no secret to Kue-Ken efficiency. Let us refer you to operators who have changed to Kue-Ken. They never go back to old style crushers.

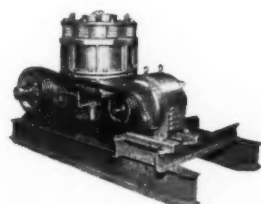


No. 80 Kue-Ken 36" x 10". 50-60 tons per hour at 1-inch setting. 50 H.P. maximum. No heavy fly wheels required or massive foundation, yet operates at 375 RPM . . . 25 to 50% faster than other crushers.

Sizes 12" x 7" to 48" x 60"

Get Complete Facts — Write for Bulletins

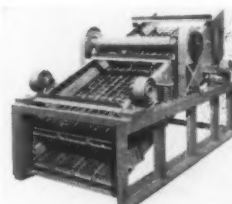
LUND MACHINERY CO.—Salt Lake City, Utah; CLOSER EQUIPMENT CO.—San Antonio, Texas; WASHINGTON MACHINERY & STORAGE CO.—Seattle, Wash.; CONSTRUCTION EQUIPMENT CO.—Spokane, Wash.; HEWITT-ROBINS, INC.—Pasadena, Calif.; EDWARD L. KROPP CO.—Portland, Ore.; CAL-ORE MACHINERY CO.—Medford, Ore.; ANAHUAC MACHINERY CO.—Mexico City, Mexico; UNIVERSAL EQUIPMENT CO.—Vancouver, B. C.



Kue-Ken Gyracones



Rib-Cone Ball Mills



Overstrom Screens

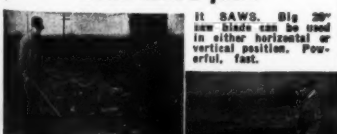
*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

STRAUB MFG. CO.

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor, Broad and Arch Streets, Philadelphia, Pennsylvania.
Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.

Kue-Ken Jaw Crushers	Revolving Screens	Rib Cone Ball Mills
Kue-Ken Gyracone Crushers	Classifiers	Concentrating Tables
Overhead Eccentric Crushers	Feeders	Vibrating Screens

The BACHTOLD MOWER with attachments does more jobs



It SAWS. Big 30" saw blade can be used in either horizontal or vertical position. Powerful, fast.

It MOWS right up to bushes, trees, buildings, etc., cutting a 20" swath evenly. Adjustable runner. It CULTIVATES almost any kind of soil.

• Easy starting • Finger-tip control • Portable • Compact • Fully guaranteed • Push-type and self-propelled-type models

BACHTOLD BROTHERS, INC. Forrest, Illinois

Insulated Wall Panels Lower Building Costs

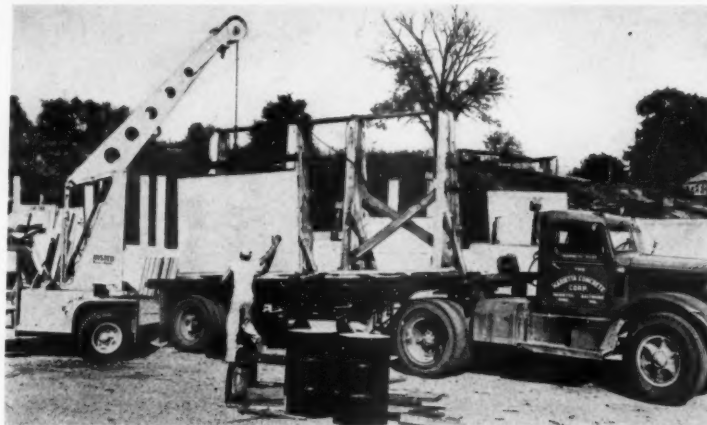
(Continued from preceding page)

semitrailer outfits on which A-frames have been constructed. An average day consists of erecting about 35 panels or approximately 2,500 square feet of wall area. Additional reglets cast in the inside face of parapet panels adapt the panels to roofing requirements. Two or three threaded metal inserts designed to receive connection bolts are embedded near the top and bottom edges of each panel.

Most of the panels have tongue and groove joints; these insure watertightness and help align the panels on steel building frames. The panels are supported on the steel frames at every third course. The inserts cast in each panel, together with loose clip angles and malleable iron clamps, form adjustable and positive fastening devices. Thin strips of lead are used as a cushion between the concrete and the steel fastening devices.

Insulating Material

The panels contain 1½ inches of rigid insulation. At least 12 different materials were considered by the designers and tested for insulation properties, cost, supply, handling, cutting, water absorption, size of units, weight, and uniformity of thickness. Four were approved: a precast board made with wood-chip aggregate and a cement binder; a precast board made with wood-fiber aggregate and a cement binder; a cellular-glass insulation block; and a glass-fiber insulation board. The insulation is provided in sheets 2 feet wide x 8 feet long, a size that is economical to handle in the fabricating shop. It is possible simply by changing the type of insulating material to vary the resistance to thermal conductivity, even though the thickness of the core is a constant 1½ inches. The four materials give a coefficient of heat transfer (U-value) ranging from 0.14 to 0.33 Btu per hour, per square foot, per degree F. Since the U-value for a 12-inch brick wall is 0.36, the



The Marietta precast panels are hoisted by crane onto a semitrailer with special frames for transport to the building area.

precast-concrete wall panels have better insulating value with a total thickness of only 5 inches.

Calking

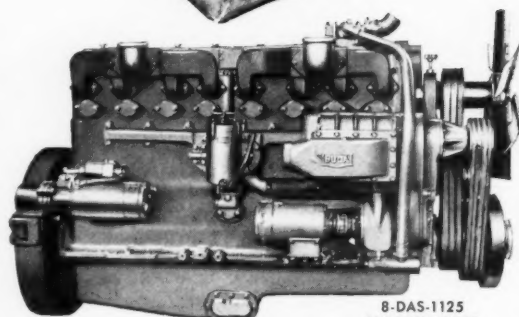
Before the panels are erected, a continuous, impervious, cellular rubber

strip is cemented in the grooves with a rubber adhesive. When the panels are in place, the joints are packed with oakum and calked. In the horizontal joints, however, where one panel bears directly on the one below, cement mortar is used to provide uniform bearing between panels. The outside horizontal mortar joint is raked to a depth of ¾ inch and then calked to give the same appearance as the other joints. A light-gray calking compound is used on the inside joints and a dark-gray, almost black, compound is used on the exterior for architectural effect.

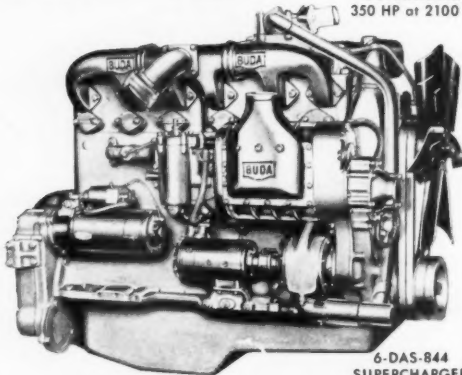
The muslin form lining used in casting the panels gives them a smooth textured surface that minimizes light reflection and provides a base for painting. This textured surface is used on the interior walls for pleasing, decorative effect. The exterior surface is finished with a wood float and rattan broom, which creates a striated effect that extends vertically up the building interrupted only by the horizontal joints.



6-DA-779
185 HP at 2100 RPM



8-DAS-1125
SUPERCHARGED
350 HP at 2100 RPM



6-DAS-844
SUPERCHARGED
280 HP at 2100 RPM

pick **BUDA DIESELS**
and be **SURE YOUR**
EQUIPMENT PAYS
A PROFIT

Take all the luck you can get... but be sure your power is right. Pick Buda Diesels for shovels, wagons, scrapers, dozers and trucks and you can count on lower operating costs, less maintenance and less downtime.

Buda engines are heavy-duty built with a reserve of power for extra load requirements... are carefully engineered with higher torque at proper speeds to give ideal working performance... and are precision designed and performance-proved to give long life (6000 hrs. average) operation between overhauls.

Ask your nearby Buda Engine Distributor to give you complete details. Write for Bulletins and data.
The Buda Company, Harvey, Illinois.

8C-21

BUDA

...there is a BUDA DIESEL for every need

Manufacturers of Diesel and Gasoline Engines, Maintenance of Way Products, Lifting Jacks, Earth Drills and Material Handling Equipment

CAST SEMI-STEEL BALLS

FOR: ROAD BUILDERS
WRECKERS
SCRAP YARDS

500 lbs.
... 3,300 lbs.
1,000 lbs.
... 4,000 lbs.
1,500 lbs.
... 6,500 lbs.
2,000 lbs.
... 8,000 lbs.

Special
Release Hooks
for Dropping



Shipment from Stock

We make all sizes and types Manhole Frames and Covers, Highway Grates and Castings.

Also manufacturers of centrifugal pumps, mechanical stokers, sheet metal working machinery of various sizes.

Write for prices

FREDERICK IRON & STEEL, INC.

Dept. B, 7th & East Streets,
Frederick, Maryland



This screw-type deadman for anchoring guy lines or cables and supporting foundations comes in lengths from 24 to 120 inches.

Screw-Type Anchor

A screw-type steel deadman for anchoring guy lines or cables and supporting foundations is manufactured by Van Dyke Industries, 3625 Cahuenga Blvd., Los Angeles 28, Calif. The anchor consists of a pointed tubular body with a wide-flange screw. Blade sizes range from 4 to 14 inches. The unit is made in lengths from 24 to 120 inches and is driven into the ground manually using a turnstile-type collar. The 24-inch model can be handled by one man turning a single arm collar.

The Ezy may be set vertical or at an angle. The company claims the smallest unit can be driven in 2 minutes, and the largest in 40 minutes. Extensions are made where deep anchoring is required. The tool can be pulled out and used over again, and two or more may be tied together for extreme tension.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 936.

Alaska Defense Construction

Spring brought a burst of renewed construction activity to Alaska, with a \$360,000,000 defense program already well under way. Under the supervision of the Corps of Engineers, 73 active construction contracts, in varying stages of completion, have come out of winter storage and the Army Engineers plan to offer some 70 new contracts to open competitive bidding as the year goes on. The partly completed contracts (necessarily closed down during the four winter months except for interior work) have a value in excess of \$190,000,000 and are expected to attract several thousand migration workers this year. The jobs to be put out on bid invitations over the next eight months comprise a \$170,000,000 extension to the program.

Interest in Alaskan defense contracts is rising, according to the average of 9.6 bidders at each opening during recent months as compared with the 4.0 average in March, 1951, and the authorities put this down to the fact that earlier handicaps are being steadily mastered. Some 350 newly interested stateside contractors made inquiries about the 1952 open competitive bidding schedule.

As an indication of the kind of jobs involved, contractors from ten states and Alaska hold title to such projects as: a station hospital; central heating and power plants; outside utilities; railroad trackage; family quarters; enlisted men's barracks; a composite housing building; and an Army Communications station. Smaller contracts include: a telephone exchange; a bakery; a theater; and a remote-receiver facility.

Information on 1952 bid openings

and local working conditions is available to any contractor at the Seattle Branch Office, Alaska District Engineer, 300 Exchange Building, or at Anchorage.

Booklet on Steel Shores

A new booklet on adjustable steel shores is announced by Acrow, Inc., 510 N. Dearborn St., Chicago 10, Ill. It illustrates a typical erection procedure showing how the shores are laid flat and extended, raised into vertical position, and topped with decking after final adjustment.

The Acrow shore is a self-contained unit. The adjustable tube is held in place by a pin and threaded collar. A self-cleaning device eliminates crusts of dirt and concrete on the threads. Models are furnished which can support decking from 5 feet 7 inches to 15 feet high.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 875.

Multi-Duty "Power-Horse"

60% CHEAPER TO OPERATE.
1/3 LESS COST
THAN A CRAWLER.

PIVOT TURNS on front wheels. Can travel 8 M.P.H. loaded. 10 M.P.H. run-back.

SPECIFICATIONS: 3/4-yd. bucket. 2000-lb. lift plus. Dumps far side of truck. 15 ft. ground to bolt-hole. Weight 2400 lbs. loader—4700 lbs. tractor. Attachments: fork lift, digger teeth, dozerblade, coal bucket, boom hook.

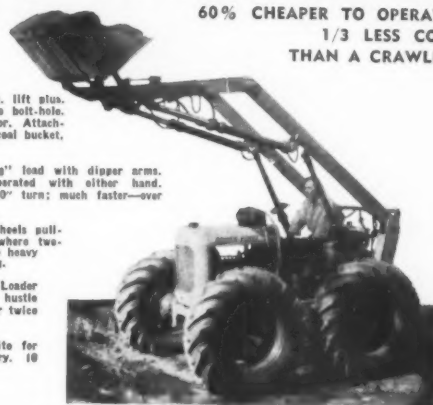
LOADS HYDRAULICALLY: by "crowding" load with dipper arms. Controls, both loading and steering, operated with either hand. Operated like crawler but more flexible 60° turn; much faster—over 16 M.P.H.

FLOTATION: tires 13 X 24 plus front wheels pulling. Operates in slush, mud and sand where two-wheel drive spins and where a crawler is too heavy and too slow. DRIVERS like its non-jolting.

COST AND UPKEEP: the PH43 Dipper-Loader is light, it is fast, it is on rubber. Its hustle moves more dirt by day's end than a crawler twice its size.

Operate it yourself, then believe it. Write for location of nearest tractor. California factory. 10 years' proven operation.

DEALERS WANTED.



NATIONAL IMPLEMENT COMPANY

55 WILLIAM STREET, NEW YORK 5, NEW YORK

A new and better heavy-duty motor oil



STANOLUBE HD-M

REG. U. S. PAT. OFF.

Motor Oil

for your harder-working engines

• New and better STANOLUBE HD-M Motor Oil is an improved additive-type lubricant that combines more effective detergent-dispersant action with greater oxidation stability. Result: greater protection for commercial and military trucks, busses, and construction equipment... greater protection for your harder-working engines.

More effective detergent-dispersant action and greater oxidation stability, proved by laboratory tests and confirmed in extensive field service, mean that engines stay cleaner under the toughest of operating conditions. Freedom from deposits means less engine wear, longer periods between overhauls, and lower maintenance costs. New STANOLUBE HD-M also offers the same bearing corrosion resistance and freedom from

foaming which helped make STANOLUBE HD a preferred lubricant for heavy-duty applications during the past nine years.

Your nearby Standard Oil service-supply center stocks STANOLUBE HD-M Motor Oil for fast local delivery. This service-supply center is also headquarters for your Standard Oil lubrication specialist. Call him today. He can help you obtain maximum lubrication benefits with STANOLUBE HD-M, a new and better heavy-duty motor oil. Or write: Standard Oil Company (Indiana), 910 South Michigan Ave., Chicago 80, Illinois.



STANDARD OIL COMPANY

(Indiana)

Distributor Doings



State Equipment Co., Inc., of New York displays its machines—and itself—in this glass showcase on the Albany-Schenectady Road. Let's go inside.

Dealer Housed in Glass

State Equipment Co. Photos



From his desk, Vice President and Branch Manager John L. Fremon can see his entire staff—through more glass.

• ON the Albany-Schenectady road stands a glass house as modern as tomorrow. Its occupant is State Equipment Co., Inc., of New York, which has become a going concern in less than two years of operation.

A lot of red tape had to be cut, and a lot of visits made to the N. Y. Department of State, before the firm could adopt its name. Then came construction of the glass house, and finally its dedication last November.

The 5,600 square feet of glass wall have an inside-outside effect as good for employees as for customers. With all the natural light streaming in, employees feel they are working outdoors. And with all the showroom equipment in full view from the highway, customers feel they are already inside—buying.

George C. Delp is President of the corporation. John L. Fremon is Vice President. And J. Paul Lyet is Secretary. Their aim? To make the distributorship second to none.



From the parts counter, customers can't fail to see new equipment on display, for the counter adjoins the showroom.



Even in the parts storeroom seeing seems to be a cinch. Look at those neat bins.



In fact, no eyestrain for anyone at State Equipment, least of all the shop men.

Distributor Doings

(Continued from preceding page)

New England AED Spring Meeting

Members of Region I (New England) of the Associated Equipment Distributors Association got together on March 20 at Hartford, Conn., for their regular spring meeting. Presided over by T. B. (Bernie) Holmes, of Holmes-Talcott Co., Hartford, assisted by Secretary-Treasurer E. G. Warren, of Vermont Road Equipment Co., Montpelier, Vt., members elected Bernie Gorman, of Tractors, Inc., Providence, R. I., to the Board of Directors of the regional group. Membership voting resulted in the election of two new firms to membership: Hill-Martin Corp., Barre, Vt., and Rowen-Leahy Co., Hartford, Conn. Group discussion centered on the possibility of a regional Road Show for New England during 1953; and the highlight of the dinner session was the address given by the guest speaker, Austin Page, Chief Engineer of Lane Construction Corp., Meriden, Conn., who told members about the advances in construction and equipment he had watched during the course of more than 25 years.

Plans were made to hold Region I's annual outing somewhere on Cape Cod this year.

Diesel Sales Leaders Honored

Ten sales engineers representing distributors of the Detroit Diesel Engine Division of General Motors received the annual W. T. Crowe award on March 13 as leaders in the sale of GM diesel engines in their respective zones for 1951. At a special dinner in Detroit, W. T. Crowe, General Manager of the Division, presented each man with a certificate of merit and a ring.

The ten thus honored were: Vincent C. Giuliano, Griffin Equipment Corp., New York, N. Y.; Jules J. Janssen, Highway Equipment Co., Pittsburgh, Pa.; Lee Hardiman, Florida Diesel Engine Sales, Jacksonville, Fla.; Herbert S. Matthews, George Engine Co., Harvey, La.; Robert A. Sime, Borchert-Ingersoll, Inc., St. Paul, Minn.; Robert Bowles, Jr., Western Machinery & Engine Co., St. Louis, Mo.; King D. Boyd, Stewart & Stevenson Services, Inc.,

Houston, Texas; George A. Hefty, Mountain Tractor Co., Missoula, Mont.; Robert J. Hines, Anderson-O'Brien Co., Los Angeles, Calif.; and Walter W. Brydges, Evans Engine & Equipment Co., Seattle, Wash.

Visits Hyster Dealers in Europe

George E. Bannister, Export Representative of Hyster Co., Portland, Oreg., manufacturer of lift trucks, mobile cranes, Straddle Trucks, Turret Trucks, and attachments for Caterpillar tractors, left New York by air recently on a trip to Europe. Mr. Bannister will go to Portugal, Spain, Italy, Switzerland, and France, where he will visit Hyster dealers and assist them in applications of Hyster equipment and modernization of their facilities.

New Quarters for Boardman Branch

The Tulsa, Okla., branch of The Boardman Co., Oklahoma City, has moved into a new building at 3415 Sand Springs Road, Tulsa. The new plant is fully equipped, and sales and



Boardman's new branch at Tulsa, Okla., is as modern inside as outside, with the latest in sales and service facilities. Some of the equipment handled lines up outside for a family portrait: papa, mama, and the little ones.

service personnel are already installed. Boardman handles Allis-Chalmers, Baker, Gar Wood, Tractomotive, Carco, Buckeye, and Novo contractors' and road builders' equipment, as well as parts and accessories.

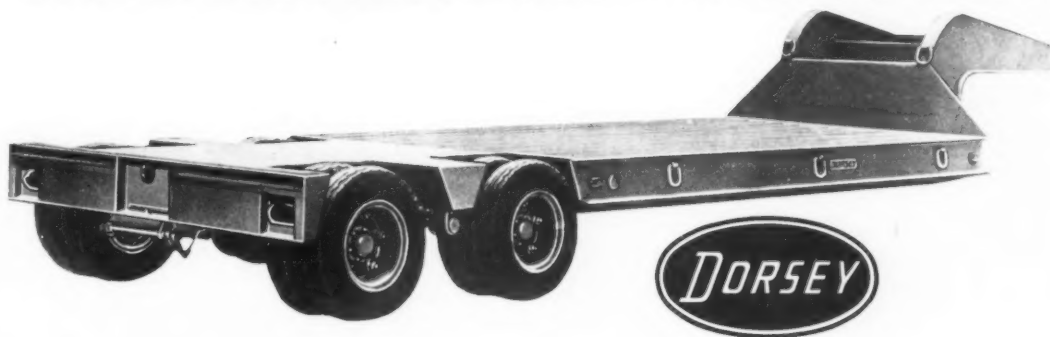
Messenger Vibrators Names Seven

Messenger Vibrators, Fair Haven, Mich., manufacturer of concrete vibrators and flexible-shaft equipment, an-

nounces the appointment of six new distributors to handle its equipment in five states. They are: Builders Rental Equipment, Inc., 717 Spencer St., Syracuse 1, N. Y., and 46 Skillen St., Buffalo 23, N. Y.; Cesco Equipment Co., 3838 Laclede Ave., St. Louis 8, Mo.; E. K. S. Equipment Co., 1116 Plainfield Ave., N. E., Grand Rapids 5, Mich.; Howard T. Moriarty Co., 437-439 Broadway,

(Continued on next page)

Engineered for Dependability Under Rated Loads... WITH STRENGTH TO SPARE!



ON every continent construction men have learned to depend on Dorsey Low Bed Trailers under the toughest conditions . . . because the rated carrying capacity of a Dorsey is purposely conservative.

Beam strength, tire capacity, structural members—all are engineered to provide a margin of safety when equipment is subject to unusual strain. On tough jobs and over rough terrain Dorsey's safety factor is all-important! Reserve strength prolongs life and makes for dependable, trouble-free operation.

Lowest practical loading height is a feature of each Dorsey model.

Above: Model MTS, in capacities 15 to 35 tons. Three other models from 15 to 75 tons, with up to 100 tons on special orders. Tilt-to-load models up to 10 tons.

For special sizes and designs you will find Dorsey geared to fill your requirements with maximum economy.

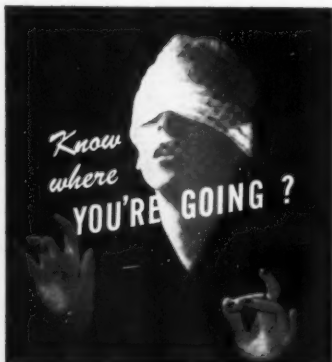
NO EXTRAS TO BUY for normal basic operations. The base price of a Dorsey includes equipment for most applications. Optional items are available for special requirements.



The Dorsey plant—one of the world's major producers of trailers. Here thousands of precision-built trailers roll off modern assembly lines each year. A system of rigid inspection at each stage assures Dorsey Dependability.

LET YOUR DORSEY DISTRIBUTOR SOLVE YOUR HEAVY-TRANSPORTATION PROBLEMS—DORSEY ENGINEERS ARE AT YOUR SERVICE!

DURABLE DEPENDABLE DORSEY TRAILERS
TULSA, ALABAMA



Even a blindfolded ditching or excavating machine operator will find the pipe—when he breaks it! . . . To be safe, use the efficient, economical Detectron "505." It finds the pipes and cables first—with speed, pinpoint accuracy, greater depth and positive location . . . Throw away the blindfold—get a new, improved "505" . . . you'll never regret it!

WRITE FOR CATALOG NO. 51

THE **Detectron** CO.
5631 Cahuenga
NORTH HOLLYWOOD, CALIF.

Distributor Doings

(Continued from preceding page)

Toledo 4, Ohio; United Tractor & Equipment Corp., 135 E. 146th St. New York 51, N. Y.; Vern Wheeler Equipment Co., Inc., Florida Ave., Jacksonville, Fla.; and Broome Equipment Co., Sand Bar Ferry Road, Augusta, Ga.

I-H Training Schools on the Move

The two large truck-and-trailer units which became familiar last year to some 20,283 distributors and customers of International Harvester Co., Chicago, Ill., are again on the road. Each unit has been refurbished with new cutaway diesel-engine and tractor-chassis assemblies, slide films, charts, and other training material. As in 1951, the two mobile training units will make the Mississippi River their operational di-



Even their backs look enthralled. Servicemen of Browning-Ferris Machinery Co., Dallas and Houston, Texas, listen carefully while an International-Harvester instructor uses a mobile-training unit to explain design changes and latest service techniques for crawler-tractor transmissions.

viding line, with Unit No. 1 taking care of the eastern half of the country and Unit No. 2 the western.

On the basis of the great response to these International Harvester training schools last year, the company be-

lieves that they fill an important need, since they supplement the factory training program for distributor personnel by bringing information on the latest changes and improvements in the equipment to the men who need to know so they can do their jobs efficiently.

New Rhode Island Distributor

A new equipment house for the state of Rhode Island and southeastern Massachusetts recently opened its doors. It is BMG Equipment Co., 116 Hartford Ave., Providence, R. I. Byron M. Gammino is President and Treasurer; Charles E. Paine, General Manager; and Robert C. Duffy, Sales Manager.

BMG's general lines of new equipment include: Michigan cranes, shovels, and backhoes; Worthington pumps and compressors; Ransome pavers and mixers; Mall power tools; Marlow pumps; Roebling wire rope; Pettibone-Mulliken construction equipment; Wooldridge earth-movers and scrap-

(Continued on next page)



"Tag Master"

—Combination
Tagline Winder
& Dipper Trip

ADVANTAGES THAT MEAN

"More Yards per Hour"

1. Tagline pull is adjustable to any job.
2. Tagline pull remains uniform at truck level or 70 feet below machine.
3. Tagline pull is automatic.
4. Tagline pull can be increased instantly to manipulate a clamshell or grapple.
5. Loading is accurate without moving boom.
6. Casting is accurate without moving boom or machine.
7. "Tag Master" permits digging over a 25-foot range without moving boom or machine.
8. "Tag Master" is installed inside the cab.
9. It's easily converted to a Dipper Trip for use with a shovel front.

MORIN MFG. CO., INC.

WEST SPRINGFIELD, MASS.

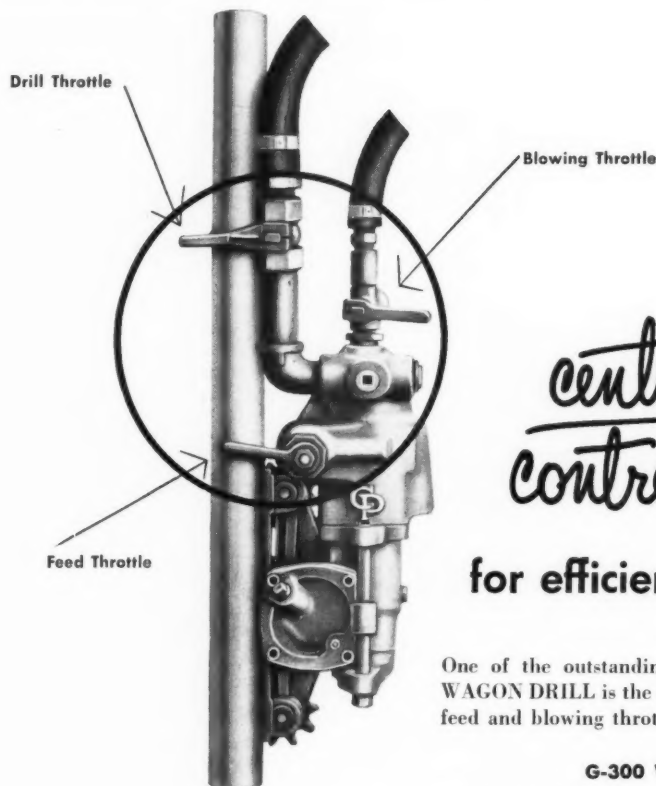
Please send "Tag Master" details.

Make of our machine

Size & model

Name

Address



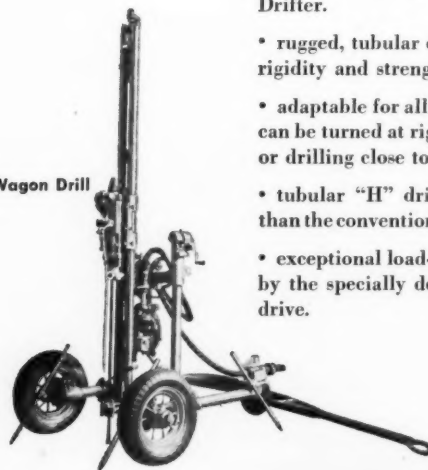
centralized controls... for efficient operation

One of the outstanding advantages of the G-300 WAGON DRILL is the convenient grouping of drill, feed and blowing throttles.

G-300 Wagon Drill

- designed to take full advantage of the high drilling speed and strong rotation of the CP 4-inch 70-N Drifter.
- rugged, tubular chassis and drill carriage provides rigidity and strength without unnecessary weight.
- adaptable for all types of wagon drill work. Wheels can be turned at right angles to facilitate line drilling or drilling close to a ledge or wall.
- tubular "H" drill support gives greater stability than the conventional design and minimizes vibration.
- exceptional load-carrying capacity is made possible by the specially designed feed motor and cone-gear drive.

G-300 Wagon Drill



**CHICAGO PNEUMATIC
TOOL COMPANY**

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Write for further information.

Distributor Doings

(Continued from preceding page)

ers; Transport trailers; Vulcan pneumatic tools; Lippert cement plants; and Corrigan conveyors. BMG will service all of the lines it represents and expects the repair of construction equipment to be a big item in its business. Its new building, located at one of the busiest intersections in Providence, has a total of 9,000 square feet of floor space, of which about 7,000 feet is devoted to repair and storage facilities. Another 17,000 square feet of outside paved area completes the firm's setup.

Scott Part Owner of Virginia Firm

George Cole Scott, of Richmond, Va., has purchased a substantial interest in Highway Machinery & Supply Co., Inc., Richmond and Salem, Va. At the same time Mr. Scott assumes the duties of Vice President in Charge of Sales Promotion.

Huber's 3 New Dealers Abroad

Huber Mfg. Co., Marion, Ohio, has appointed the following new distributors to handle its complete line of road-maintenance equipment: Roberto Colon Machinery Co., Comercio St. No. 400, San Juan, Puerto Rico; Vecdi Diker, Mitat Pasa Caddesi 54-B, Ankara, Turkey; and Horacio Torrendell, S. A., Cuareim 2052-82, Montevideo, Uruguay.

R. I. Distributor for Texrope

The General Machinery Division of Allis-Chalmers Mfg. Co., Milwaukee, Wis., has named Empire State Equipment Co., 36-38 Randall St., Providence, R. I., its distributor for Texrope drive equipment in Rhode Island. Empire State was established in 1949 and James F. Hoey, Jr., and Richard P. Sullivan are partners in the firm.

New Appointments for Herd

The Contractor's Sales Division of Herd Equipment Co., Oklahoma City, Okla., gains a new member in Marty Heil, who comes to the company with an admirable record in construction-machinery sales. He spent many years with the Jaeger Machine Co., Columbus, Ohio, and with the Lull Mfg. Co., Minneapolis, Minn., and has been



C. L. Wood, President of Eagle Crusher Co., Galion, Ohio, stands beside 3 of his company's truck-mounted loaders consigned to Montevideo, Uruguay. The machines are all-purpose loaders and can handle any loose material at the rate of 3 to 5 yards a minute. The Amrocta Co., New York, arranged the export.

called upon to work closely with many state contractors on construction and machinery problems. Mr. Heil will make his headquarters at Tulsa and will be responsible for the eastern

side of the state of Oklahoma from the Kansas border to the Texas line. His accounts will include general and building contractors, oil companies, utilities, and industrials.

Earl Rinnert is a new recruit to the company's county and municipal sales force. He has many years' engineering experience including a period with the Oklahoma State Highway Department, and will take care of the following counties in Oklahoma: Muskogee, Okmulgee, McIntosh, Pittsburgh, Haskell, Latimer, LeFlore, and Sequoyah.

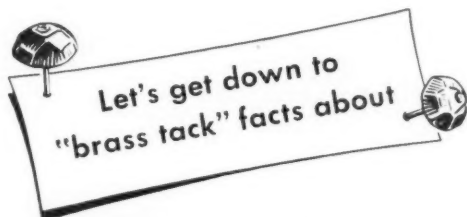
American Tractor's Canada Dealer

F. H. Hopkins & Co., Ltd., 8500 Decarie Blvd., Montreal, Canada, was recently appointed distributor in Quebec and eastern Ontario for American Tractor Co., Churubusco, Ind., manufacturer of the Terratractor crawler tractor.

Morrissey Holds Open House

April 5 was a big day for Morrissey Bros. Tractor Co., New England distributor. On that day the firm held an all-day open house to welcome friends and customers to its new quarters at

(Continued on next page)



Advance-Design TRUCKS



Fact No. 1

Fact No. 2

Fact No. 3

Fact No. 4

YOU PAY LESS TO BUY!

Get the price on the Chevrolet truck that's the right size, type and capacity for your work. You'll find that it lists for less than any other truck capable of doing the same job. Chevrolet has the lowest priced line in its field.

YOU SAVE ON COST PER MILE

You can't beat Chevrolet's Valve-in-Head engine for over-all economy—fuel, oil, upkeep. It just keeps rolling along. And extra-rugged frame, hypoid rear axle, and Flexi-Mounted cab mean longer life, lower maintenance.

YOU GET THE RIGHT TRUCK FOR THE JOB

No truck is worth the price if it doesn't get the job done—fast and sure. Chevrolet trucks are factory-matched to the payload, factory-matched to the job. There's a standard body and chassis, or chassis for special body, that's just right for your work.

YOUR TRUCK INVESTMENT IS SAFER!

Comes time to trade in an old Chevrolet truck for a new one, here's good news: Year after year, used Chevrolet trucks traditionally bring more money compared to what they cost, than other makes. The demand is there, because Chevrolet trucks stand up better.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBURETOR—for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH—for easy-action engagement • SYNCHROMESH TRANSMISSION—for fast, smooth

shifting • HYPOID REAR AXLE—for dependability and long life • TORQUE-ACTION BRAKES—on light-duty models • PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—on medium-duty models • TWIN-ACTION REAR BRAKES—on heavy-duty models • DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-

duty models • CAB SEAT—with double-deck springs for complete riding comfort • VENTILATION—far improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGNED BODIES—for greater load protection • ADVANCE-DESIGN STYLING—for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN

THE ANSWER TO THE ENGINEER'S PRAYER

BREAKS CONCRETE FASTER

TAMPS BACKFILL BETTER AND FASTER FOR LESS



THE NEW, MORE POWERFUL MIGHTY "B" MIDGET

Fastest Pneumatic Concrete Breaker and Backfill Tamping. Replaces all the dirt removed after pipe has been laid. Gives you high density compaction. Ready to repave immediately. No temporary paving. No spoil dirt to haul away. Due to high density compaction, requires little asphalt in replacement. Can cost of tamping and breaking of concrete many times. Can be worked manually or automatically. Model MMB will run to full capacity from 160' Compressor—Model MMB-105 will run to full capacity from 105' Compressor. For further particulars, see your nearest dealer, or write Department C.

R. P. B. CORPORATION

2751 East 11th Street Los Angeles 23, California



Distributor Doings

(Continued from preceding page)

the junction of Route 128 and Middlesex Turnpike, at Exit 35, Burlington, Mass. Guests were introduced to the new 12,000-square-foot building located on five acres of land. Most of the floor space is devoted to parts and repairs and Morrissey keeps twelve service men available at all times to offer help

and advice with maintenance and repair problems. "As far as we're concerned," says Morrissey, "preventive maintenance is here to stay."

Included in Morrissey's exclusive representations are: Allis-Chalmers tractors and motor graders; Buckeye shovels and spreaders; Gar Wood bulldozers and scrapers; Pitman Hydraulic Lift cranes; Ransome concrete pavers and mixers; Wooldridge earth-movers; and Worthington compressors, air tools, and wagon drills. Six sales representatives are always on hand to help with the selection of equipment.

William Morrissey is President and Treasurer of the firm; Leonard Morrissey is Vice President and Sales Manager; George Richberg, Service Manager; and John MacGillivray, Office Manager.

Kingman Joins Illinois Dealer

William W. Kingman has joined the Melrose Park, Ill., branch of Illinois Contractors Machinery, Inc., and will direct the company's sales program in the Chicago area. He will handle, among other equipment, that manufactured by R. G. LeTourneau, Inc.; Ingersoll-Rand Co.; Baldwin-Lima-Hamilton Corp.; Michigan Power Shovel Co.; Construction Machinery Co.; Erie Steel Construction Co.; and J. I. Case Co. Mr. Kingman was General Sales Manager for the Manufacturing Division of the Maxon Construction Co., Inc., Dayton, Ohio, for 11 years prior to his present appointment.

Hedge & Mattheis Handles Pioneer

Hedge & Mattheis, 285 Dorchester Ave., Boston 27, Mass., is a New England distributor for Pioneer Engineering Works, Minneapolis, Minn., manufacturer of equipment for the quarry, gravel, and road-building industries. Hedge & Mattheis will handle Pioneer equipment in the states of Massachusetts, Connecticut, and Rhode Island. The firm has branch offices in Worcester and Springfield, Mass.; Providence, R. I.; and Hartford and New Haven, Conn.

Stilwell for Missouri-Illinois

Jack Stilwell has taken over the post of Sales Representative in the Linn, Mo., area for Missouri-Illinois Tractor & Equipment Co., St. Louis, Mo. Missouri-Illinois Tractor is distributor in eastern Missouri and southern Illinois for: International Harvester Co.; J. D.

Adams Mfg. Co.; Ingersoll-Rand Co.; Hough Co.; Bucyrus-Erie Co.; Construction Machinery Corp.; The Hill Co.; C. R. Jahn Co.; Michigan Power Shovel Co.; and others. The company maintains sales, service, and parts branches in Quincy, Ill., and Charleston, Mo.

Three More Cleco Dealers

The Cleco Division of the Reed Roller Bit Co., Houston, Texas, manufacturer of the Cleco and Dallett lines of air tools and accessories, has appointed three new distributors: Bristol Metal Working Equipment Co., 534 Front St., Hartford, Conn.; S & M Supply Co., 761 S. Seventh St., Grand Junction, Colo.; and Quinn Welding Supply Center, 2725 Chicago Road, Chicago Heights, Ill.

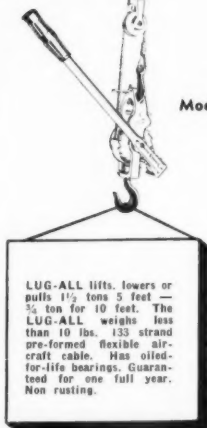
Prime-Mover Makes Dealer Changes

The Prime-Mover Co., Muscatine, Iowa, manufacturer of the Bell Prime-Mover, (Continued on next page)

PUT THE LUG-ALL ON YOUR PAYROLL FOR \$35.25

Imagine getting such a "jack-of-all-trades" hoist for only \$35.25. The LUG-ALL is used to pull conduit... set fences... lift, lower or pull anything up to 1½ tons.

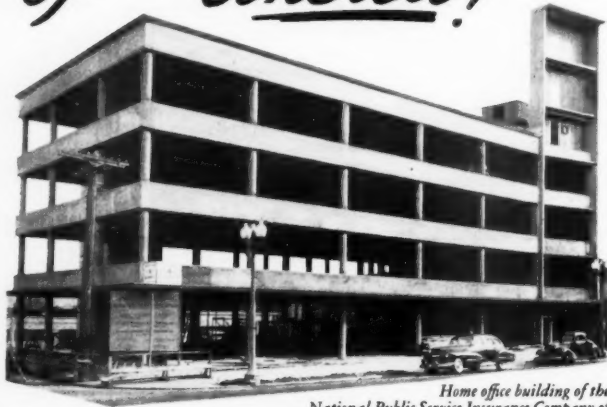
One construction superintendent reports "SAVED 18 HOURS ON FIRST JOB WITH OUR LUG-ALL." This is the powerful, portable winch hoist that stands up under rough construction job usage. Every LUG-ALL is factory pre-tested to 100% overload. ORDER YOUR FIRST LUG-ALL TODAY — \$35.25 FOB Factory.



Ask for Model 3000-HD

THE LUG-ALL COMPANY
WYNNEWOOD 2, PENNA.

ROUND COLUMNS of Concrete!



Home office building of the National Public Service Insurance Company of Seattle, Wash. Architect, Kenneth S. Ripley. Builder, Brazier Construction Company.

formed with
Sonotube

PAT. APP. FOR

LAMINATED FIBRE TUBE—

for one time use

**SAVE TIME
LABOR
MONEY**

IMMEDIATE DELIVERY

Easy-to-handle Sonotubes are widely specified by architects and engineers for use in forming concrete columns, piers, piles, underpinning. Available in sizes from 3" to 24" I.D., and up to 25' long. Saw to any length on job.



Write for complete information and prices

SONOCO PRODUCTS COMPANY
GARWOOD, N. J. HARTSVILLE, S. C. MYSTIC, CONN.

FOUNDATION CONSTRUCTION

CAISSONS SHAFTS

DRILLED AND UNDERREAMED

PIERS

SPECIAL DRILLING PROBLEMS

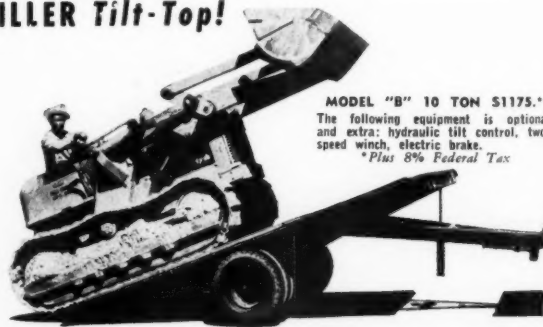
Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

McKINNEY
DRILLING COMPANY

NACOGDOCHES, TEXAS

Phones: 1195-1053 • P. O. Box 190

**CUT time between jobs...
get extra production from slow machines
with MILLER Tilt-Top!**



MODEL "B" 10 TON S1175.*
The following equipment is optional and extra: hydraulic tilt control, two-speed winch, electric brake.
*Plus 8% Federal Tax

Time lost by slow machines in between-job travel is cut to a minimum when you have a MILLER handy. Quick tilting platform forms its own ramp while self moving equipment practically loads itself. Platform lowers, locks and you're off to the next operation with no lost

motion. It's the extra trailer for extra production... cuts non-productive travel time for operator as well as equipment. Standard platform is 14' x 8', optional 16' available.

IMMEDIATE DELIVERY



SEE YOUR DEALER or WRITE Dept. C-5

MILLER RESEARCH ENGINEERS

456 SOUTH 92nd St.

MILWAUKEE 14, WIS.

Distributor Doings

(Continued from preceding page)

Mover mechanized wheelbarrow, has appointed ten new dealers, as follows: R. S. Armstrong & Bros. Co., Albany, Ga. (for the southern half of Georgia); J. D. Evans Equipment Co., Rapid City and Sioux Falls, S. Dak. (for the state of South Dakota); Industrial Equipment Co., Billings, Mont. (for southern Montana and northern Wyoming); Treasure State Equipment Co., Kalispell, Mont. (for ten counties in western Montana); Normont Equipment Co., Great Falls, Mont. (for northern Montana); The Sawtooth Co., Boise, Idaho (for southern Idaho and four counties in eastern Oregon); Gierke-Robinson Co., Davenport, Iowa (for northwestern Illinois and Scott County in the state of Iowa); Clark-Wilcox Co., Boston, Mass. (for the state of New Hampshire); Superior Scaffolding Co., Culver City, Calif. (for the state of California); and Universal Equipment Co., Seattle, Wash. (for the western half of the state of Washington).

Calnon Is Cummins-Sales V. P.

J. T. Calnon, former Sales Manager of Cummins Sales & Service, Inc., Fort Worth, Texas, is promoted to Vice President, Sales. Mr. Calnon, who has held the posts of District Service Manager at the company's Houston and Wichita Falls branches, is now in charge of Cummins engine sales throughout the company's area of operations.

Two recent promotions have occurred in the company's Oklahoma City, Okla., branch. H. W. Everroad, formerly District Service Manager, is now Manager, Engine Division, at that branch; and W. N. Eason, former Shop Foreman, takes Mr. Everroad's place as Service Manager. Mr. Everroad has been with Cummins Sales & Service since 1941, and Mr. Eason since 1947.

Wrentham Handles Dayton Pump

The Wrentham Co., 12 Whiting Street, New Haven, Conn., has been appointed New England sales representative of the Dayton Pump & Mfg. Co., Dayton, Ohio, manufacturer of Rapi-dayton electric water systems and water softeners. Joel Finkle is General Manager of Wrentham.

Midwestern Plans New Building

Midwestern Engine & Equipment Co., Tulsa, Okla., is making construction plans for a new building on Sapulpa Road near Tulsa, just east of the Tulsa junction point of U. S. 66 and the new Oklahoma City-Tulsa Turnpike.

Midwestern began in 1946 as exclusive distributor in its area for Continental Motors and Owens-Corning Fiberglas pipe - wrapping materials. However, as it now represents over 30 makes of pipeline and general contractors' equipment, officials of the company feel it has outgrown its present quarters. Construction of the new building will begin just as soon as plans are off the drawing board.

Koehring Distributor, Minnesota

Ruffridge-Johnson Equipment Co., 250 Tenth Ave., S., Minneapolis 15, Minn., is the newly appointed Minnesota distributor for Koehring Co., Milwaukee, Wis., whose products include: Koehring excavators, cranes, draglines; Johnson aggregate and cement plants; Parsons Trenchliners; and Kwik-Mix concrete mixers. C. T. Johnson is President and Sales Manager of Ruffridge-Johnson, L. C. Ruffridge is Vice President, and D. E. Thompson, Parts Manager, superintends the stocks of repair parts and the servicing. The

firm succeeds Rosholt Equipment Co. as Koehring distributor in Minnesota.

Genalco for Lubrication Engineers

Lubrication Engineers, Inc., Fort Worth, Texas, manufacturer of heavy-equipment lubricants, has appointed Genalco, Inc., 240 Highland Ave., Needham Heights, Mass., as its New England distributor. In this area Genalco will handle the company's complete line of multipurpose barium; graphited lubricants for track rollers; and lubes for transmissions, chassis, outside gears, and upper cylinders.

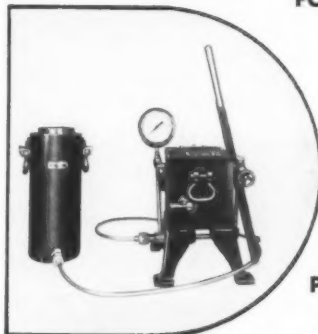
H. O. Penn Appoints Griffith

H. O. Penn Machinery Co., Inc., The Bronx, N. Y., has appointed Edmund W. Griffith Branch Manager for the Long Island territory. He makes his headquarters at 496 Jericho Turnpike, Mineola, where the Long Island branch office, showroom, and shop are located, and will handle the distribution of Caterpillar earth-moving equipment.

(Concluded on next page)

DUDGEON HYDRAULIC JACKS

FOR DEPENDABLE PERFORMANCE



"JACK" in any direction
... PUMP in only one

Needle release valve
for pin point "lowering"

FOR: PILE TESTING
UNDERPINNING — BRIDGE
PIPE PUSHING — SOIL TESTING
CAPACITIES TO 600 TONS

WRITE FOR CATALOGS — ASK ABOUT OUR RENTAL SERVICE
OTHER PRODUCTS: Hydrastatic Test Pumps • Single and
double acting Tension Jacks • Wire Stressing Jacks ...

RICHARD DUDGEON, INC.
ESTABLISHED 1850

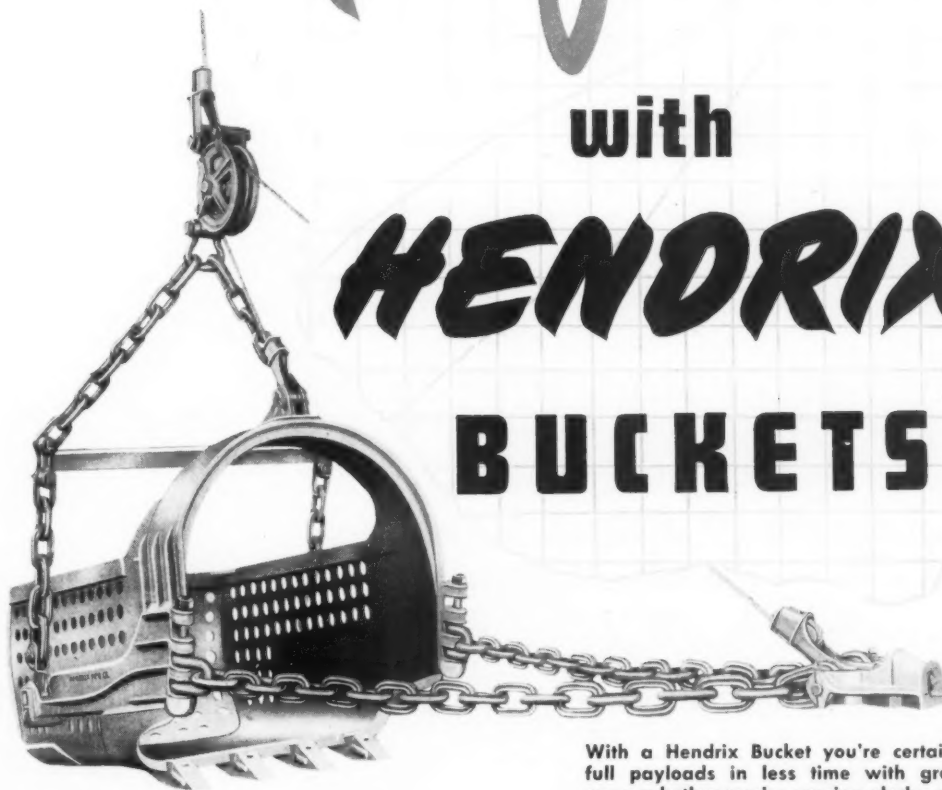
789 BERGEN STREET
BROOKLYN, NEW YORK

more

Profits

with

**HENDRIX
BUCKETS**



3 TYPES

FOR

EVERY DIGGING PURPOSE

$\frac{3}{8}$ to 40 Cu. Yds.

HENDRIX
Lightweight DRAGLINE
BUCKETS

With a Hendrix Bucket you're certain of full payloads in less time with greater ease, whether you're moving shale, sand, crushed stone or stripping overburden. Hendrix Buckets are designed to INCREASE PROFITS on any digging job and to CUT DOWN OPERATING AND MAINTENANCE COSTS. The strength of a solid mass is maintained, yet weight lessened, through a scientific arrangement of perforations. With a HENDRIX you'll roll up yardage records hour after hour, day after day, at lower cost and bigger profits!

Hendrix Buckets May Be Special Ordered
Without Perforations

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

Distributor Doings

(Continued from preceding page)

ment, Bucyrus-Erie shovels, T. L. Smith concrete mixers, and other construction and highway maintenance equipment. Mr. Griffith ("Ed") to a wide circle of acquaintances) has been with Lone Star Cement Corp. for the past 21 years.

Floyd R. Van Riper leaves Mineola

to become Parts Manager in New York, and John Rossi succeeds him as Parts Manager in Mineola.

Universal Form Clamp Distributors

Universal Form Clamp Co., Chicago, Ill., manufacturer of wall forms, form ties, form systems, column forms, and bar supports, has appointed three new distributors in the northwest: McCracken-Ripley Co., 2221 N. Albina Ave., Portland, Oreg.; Construction Equipment Co., W. 1118 Ide Ave., Spokane, Wash.; and Bow Lake Equipment Co., 300 Michigan St., Seattle and Tacoma, Wash. Universal also maintains a Pacific coast office and warehouse at San Leandro, Calif.

Mar-Rail Appoints 4 New Dealers

The Mar-Rail Conveyor Co., Pawtucket, R. I., manufacturer of the Brik-Toter portable conveyor, announces the appointment of four new distributors for the sale of the Brik-Toter and the company's recently designed accessories for bulk-material handling.

The new distributors are: W. T. Walsh Equipment Co., 12750 Berea Road, Cleveland, Ohio; North Texas Equipment Co., 413 S. Industrial Blvd., Dallas, Texas; Stillwell Supply Corp., 44-68 Vernon Blvd., Long Island City 1, N. Y.; and General Supply & Equipment Co., Inc., 530 E. 25th St., Baltimore 18, Md.

Couch Tractor Sales Personnel

Couch Tractor & Equipment Co., Kansas City, Mo., announces three changes in its sales representation. Charles G. Dunn, formerly a salesman of the company, is now Assistant Sales Manager; and Robert Weibling and M. E. Wyatt are newly appointed Sales Representatives. Mr. Wyatt's headquarters are at Maysville, Mo.

Couch Tractor distributes the following manufacturers' construction equipment: International Harvester Co.; Frank G. Hough Co.; J. D. Adams, Co.; Link-Belt Speeder Corp.; Pullman-Standard Car Mfg. Co.; Bucyrus-Erie Co.; and The Heil Co.

Repairing Tractor Grousers

Special-shape applicator bars for repairing tractors are the subject of the "Mangal Market" (Vol. 2 No. 11) available from Stulz-Sickles Co., 134-142 Lafayette St., Newark, N. J. They are supplied in 16 to 20-foot random mill lengths and can be torch-cut to fit

tractor grousers. The bars also come machine-cut to the width of the grouser.

Tractors lose their grip usually because of worn down grousers, and rebuilding them with Mangal bars will stop wasteful slippage, the company points out. Included in this publication is a table listing the linear-foot requirements for International, Caterpillar, Cletrac, and Allis-Chalmers tractors. Repairmen can estimate how much of the grouser has been worn away and from the actual-size diagrams in the "Marketer," pick the size of bar which will bring the grouser up to original size.

Complete details for welding on the bars are supplied along with directions and illustrations. Also described are other Mangal applications for repairing bulldozer blades, track rollers, drive sprockets, and idler wheels. For longest service, the company recommends applying a single pass of Seaco hard-surfacing welding electrode to cutting edges.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 950.

GMC Diesel Service Schools

The four GMC mobile diesel-truck service-training schools which started their career in November, 1950, are to continue operations, according to an announcement by the GMC Truck & Coach Division of General Motors Corp., Pontiac, Mich., and will revisit many points where additional mechanics are needed. The Division finds that the demand for this type of training is noticeably greater this year, in view of the industry trend toward diesel power.

The mobile schools, which since their inauguration have trained more than 2,000 diesel mechanics for GMC truck operators and some 900 GMC dealers throughout the nation, are mounted on GMC diesel trucks. They give experienced mechanics a five-day course, which includes work on live GMC diesel engines and subassemblies, while teaching operation, maintenance, and overhaul. Each school is limited to 12 students, who are under the supervision of factory-trained instructors. The course has now been slightly altered to include the new GM 3-71 diesel—the 3-cylinder engine recently introduced in the 2½-ton GMC Model D450-37.



• It describes and illustrates all models Bin-Dicator bin level indicators for thin or thick walled bins, inside or outside location and suspended interior installation in tanks, silos, hoppers and bins. Also describes Bin-Flo Aerator for keeping pulverized materials moving. Many wiring diagrams. Write for this helpful new catalog.

THE BIN-DICATOR CO.

13946-M Kercheval • Detroit 15, Mich.



STANDARD STEEL "S-J"

for PATCHING—PRIME COAT—SEALING—SHOULDER REPAIR and CRACK FILLING

Built to *The Highest*
Standard

Compare These Special "S-J" Features:

1. SUCKS BACK surplus material into tank after spraybar is closed. Less drip! Means clean bar for next job!
2. PIPING and PUMP are automatically drained after finishing a job! This prevents "freezing" or slow start on heavy materials!
3. All OPERATIONS easily controlled by one operator riding the unit!
4. GRAVITY DRAW OFF ON CURB SIDE—means greater safety for operator!
5. ALL PARTS Readily Accessible for easy repair. Entire piping system can be taken down by unbolting only two circle flanges!

SAVES TIME and LABOR HANDLES ALL TYPES OF BITUMINOUS MATERIAL

★ For year round use—Standard Steel "S-J" Maintenance Distributor can be used either for emergency or secondary construction work.

The most adaptable piece of road equipment you can buy, the "S-J" performs many duties of heavier machines—such as building drives, alleys, playgrounds, parking areas, shoulders, reshaping curves as well as patching and sealing. Quick to start and get going, fast on the job, the low cost of this equipment will be paid for in reduced construction and maintenance cost in a single season. Get the facts and cost on the "S-J" before you invest in any similar equipment.

WRITE FOR NEW
Catalog "S-J"

535

OTHER STANDARD STEEL PRODUCTS
Asphalt Pressure Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms and Aggregate Spreaders.

Standard Steel Works, NORTH KANSAS CITY, MO.

FLEET OWNERSHIP SPEAKS FOR ITSELF



THE EAGLE TRUCK-MOUNTED LOADER

Makes fast work of loading any loose material—dirt, cinders, sand, etc. Gets from job to job at truck speed. One-man operated! Their record of economical performance leads to fleet purchase. Send for Form 947-126.

EAGLE
JAW CRUSHERS • IMPACT BREAKERS
PULVERIZERS • CONVEYORS • LOADERS
CRUSHER CO., Inc. GALION OHIO-U.S.A.



The Simplex ratchet jack has a capacity of 10 tons and weighs 42 pounds.

A New Ratchet Jack

A new lightweight ratchet-lowering lever jack with an aluminum housing has been announced by Templeton, Kenly & Co., 1006 S. Central Ave., Chicago 44, Ill. The Simplex A1022 has a 10-ton capacity and weighs 42 pounds. It has a minimum height of 20½ inches, a 12-inch lift, and a broad toe lift with a minimum height of 2 inches. The toe lifts the full rated capacity of the jack. Other features of the A1022 include drop-forged and machined alloy-steel operating parts, double-lever sprockets, adjustable cadmium-plated springs and links, multiple-tooth pawls, lubricated trunnion bearings, and shorter fulcrum centers.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 947.

Subsurface-Drainage Report

According to replies received by the Highway Research Board to a questionnaire put to state highway departments and selected divisions or departments of the Bureau of Public Roads, the Corps of Engineers, Bureau of Reclamation, and the Civil Aeronautics Administration, the consensus is that faulty subsurface drainage causes pavement failures, including rutting and shoving in flexible pavements, pumping in concrete pavements, and frost heaves and boils in both types of pavement.

HRB Bulletin No. 45 contains a report of the Committee on Subsurface Drainage entitled "Present Practice in Subsurface Drainage for Highways and Airports", which tabulates and interprets these replies. The report was prepared by Philip Keene, Engineer of Soil Mechanics and Foundations for the Connecticut State Highway Department and Chairman of the Committee, and Seward E. Horner, Chief Geologist for the Kansas State Highway Commission.

Practically all replies give clogging of backfill, and sometimes pipe, as the chief cause of subsurface-drainage failures, though nearly all note improved backfill material since 1942; their specifications now call for concrete sand, clean bank-run sand, or bank-run gravel for backfill as a general rule. Depth of pipe invert or deep ditch varies between 2 and 6 feet; in about two-thirds of the states sub-base is carried out to the full width of the shoulders, in the others it is carried to only 1 or 2 feet beyond the edge of the pavement. Total thickness of surface, base, and subbase varies, with weather, soil, and traffic conditions, from 6 to 32 inches. As far as sand-drainage wells are concerned, replies show that four state highway departments have used them, while Federal

agencies mention them on about four dams or dikes and three airports. In each case the results were favorable. Statistical tables and diagrams complete the bulletin.

HRB Bulletin No. 45, "Subsurface Drainage", may be obtained by writing to the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. Price: 45 cents.

Tubular Steel Scaffolds

Prefabricated sectional tubular steel scaffolds are described and illustrated in a catalog available from Patent Scaffolding Co., Inc., 38-21 Twelfth St., Long Island City 1, N. Y. The Trouble Saver scaffolds are assembled without tools and are completely interchangeable.

The walk-through type consists of a standard trussed end frame and bracing. The frames are made from 3 feet 4 inches to 10 feet high.

The mason-type frame from 3 feet 1 inch to 6 feet 7 inches provides a

2-level scaffold with the working platform the correct distance below the storage level. The end frames may be used as a ladder.

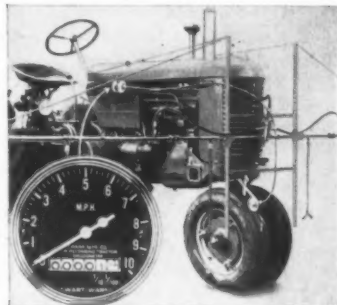
The pivoted diagonal braces fit over studs welded to the frame and are fastened to the end frames by wing

nuts. They are made in lengths from 5 to 10 feet. Adjustable legs are used at the base of the scaffold.

This literature may be obtained from the company by requesting Bulletin PSS-24, or by using the Request Card at page 16. Circle No. 957.

TRACTOR SPEED and MILEAGE Accurately Recorded by Frank Low Recording Speedometer

Fits any wheeled tractor—records speeds up to 10 m.p.h. Records mileage traveled in 10ths, hundredths, and miles. A "must" for seeding and spraying operations. Aids in keeping cost records—checking mileage against fuel used, etc. Ideal for tractors used on roadside mowing, snowplowing, etc. Used by contractors, cities, counties, and state highway departments. Easy to attach. Send for details.



FRANK MANUFACTURING CO., Inc., 12 Fort Wayne St., Mentone, Indiana

P&H

DIESEL ENGINES

2-CYCLE



SHOCK LOADS

EVERY 30 SECONDS

That's normal operation for power shovels—the toughest assignment known for diesel engines. It's the service P&H Diesels were designed to take. Years of superior performance, attested by hundreds of users, prove that P&H Diesels can take *any* of your toughest jobs in stride. It's one reason wise users are standardizing on P&H Diesels. There are many other reasons worth learning. For literature, write Diesel Division, Harnischfeger Corporation, Crystal Lake, Illinois.

P&H DIESEL DIVISION
HARNISCHFEGER
CORPORATION
CRYSTAL LAKE, ILLINOIS, U.S.A.

Winding 3-Lane Road Now a Modern Freeway

Inadequate Hilly Section Rebuilt to Meet 1952 Standards as California Contractors Construct Divided Pavement

• THE Ridge Route on U. S. 99, of which Weldon Canyon Road is the most southerly link, is a very important north-south highway connecting the Los Angeles metropolitan district and Los Angeles and Long Beach Harbors with the fertile and productive San Joaquin and Sacramento Valleys. It serves agriculture, industry, recreation, mining, forestry, and the vast commerce that makes city living possible.

When the Collier-Burns Highway Act of 1947 was enacted by the California Legislature, increasing the state gasoline tax and providing other additional funds, highway construction in California was vigorously speeded up. The section of U. S. 99 between Los Angeles and Bakersfield, carrying as it does an average daily traffic volume of 8,500 vehicles, was one of the first highways designated by the California Division of Highways for widening and improving to modern standards. Of this traffic, heavy trucks constituted over 20 per cent. For long distances they had to move slowly on the long steep grades necessary to cross the Tehachapi Mountains.

Since 1947 in Los Angeles County alone, the California Division of Highways has advertised and awarded nine major contracts for the reconstruction of this highway, totaling about \$12,000,000 for 45.2 miles. The last of these contracts, which is now nearing completion, extends from the northerly city limits of Los Angeles at Tunnel Station to Pico Canyon Road, a distance of slightly over 5 miles. This contract calls for the improving of the old 3-lane road through Weldon Canyon to provide a 4-lane divided limited-access freeway.

The prime contract for this \$1,250,000 job is held by Claude Fisher Co. of Los Angeles. It includes among its principal items, grading, drainage structures, base-course preparation, and pavement. Preparation of a ce-

ment-treated base and portland-cement paving were subcontracted, but setting up the batch plant and furnishing concrete materials were functions of the prime contractor.

This year's unusually severe rainy winter has slowed progress to a point where completion is likely to be delayed until about the middle of this month, 90 days beyond the scheduled time limit.

Project Design

The contract provides for two 2-lane



Ray Day Photo

A busy scene during improvement of a dangerous stretch on U. S. 99 in California. Batch trucks empty to the paver—spreading and finishing equipment in the rear.

roadways separated by a median strip of varying widths, with 8-inch portland-cement concrete 24 feet wide placed over cement-treated subgrade. The pavement is bordered with plant-mix shoulders 8 feet wide on the right and 5 feet wide on the left.

Drainage of the pavement surfaces will be positive, with a 1½ per cent slope in all places where the pavement is not superelevated. Shoulders will consist of asphaltic concrete, tapering from 4 inches to 2 inches in thickness (Continued on next page)

WHEN IT'S YOUR MOVE

... and mobility counts

DIAMOND DELIVERS

*Features that mean
more money for you!*

• 2 yard
folding feeder hopper
for greater portability

• sloping vibrator screen
uses gravity
to screen faster

• clutch-controlled
plate feeder

• operator's platform
permitting view
of entire plant

• 18" sand rejector
conveyor (optional)

• V-Belt drive

New...

DIAMOND Single-Pass PLANT

offers quick set-up, quick knock-down . . . easy travel

JOB-DESIGNED for counties, townships and small crushing contracts where mobility counts, Diamond introduces three self-contained plants with 10" x 16", 10" x 20" and 10" x 24" jaw crushers. Capacities range from 20 to 65 tons per hour. Portable, Diamond's single pass design features a 1½ deck vibrator screen and roller bearing jaw crusher. Easy to move, to set up, Diamond single pass plants are ideal for secondary road construction, for logging and mining operations, for building roads to backwoods locations, and for processing gravel on small jobs requiring frequent moving.

DIAMOND EQUIPMENT is built to keep you in business . . . at a profit. Before you specify or buy . . . see your Diamond Distributor. Or write for illustrated literature.

drills **6** inches of
concrete
per minute!



... gives lowest cost per foot of concrete drilled with a TILDEN Rotary Konkrete Kore Drill. Two-thirds more cutting surface make Tilden 70% more efficient. Drills 5 to 7 times more holes without resharpening — even reinforced concrete. Free factory resharpening! Use with any electric or air drill. 29 standard sizes, 3/16" to 4". Interchangeable shanks up to 60".

TILDEN
ROTARY
KONKRETE KORE
drill

Patented core
slot expels
cuttings
automatically!

U.S. Pat. No.
2506474

SOLD BY SUPPLY
HOUSES EVERYWHERE

WRITE TODAY
for free,
illustrated
catalog.

**TILDEN TOOL
MANUFACTURING COMPANY**
209 Los Molinos — San Clemente, California
Branch Office: 1144 W. Washington Blvd., Chicago 7, Illinois

Everything... for the aggregate producer

Portable Plants

DIAMOND IRON WORKS, INC.
AND THE MAHR MANUFACTURING CO. DIV.
1776 N. 2ND STREET, MINNEAPOLIS 11, MINNESOTA

outward from the pavement edge, to give a drain slope of 5 per cent.

An unusually interesting drainage system was built around the natural drainage channel which leads longitudinally through the heart of the new-fill section. It was impossible to locate a drain channel alongside the roadway because of extensive excavation quantities involved, so a plan of reinforced-concrete drainage pipe was devised. The pipe sections, ranging from 48 to 72 inches, were laid longitudinally through the heart of the fill to carry water runoff through the highway. In addition, the surface water in quite a few places is intercepted at the top of cut slopes and carried down to the pipe by means of paved drops.

Deep-Cut Grading

Grading required the excavation and movement of 750,000 to 800,000 cubic yards of dirt and soft tertiary rock, largely from a single mammoth cut over 250 feet deep. Hauls from this excavation point were so long that some 2,000,000 station-yards of overhaul were placed in the contract bid items. Excavation and installation of the pipe drain in approximately a mile of fill were job phases of more than usual interest.

Nine Caterpillar D8 tractors and 4 Wooldridge 15-yard scrapers were assigned to push loading and short-haul excavation connected with cut pioneering, but the main fleet of grading equipment consisted of fast rubber-tired digging and hauling equipment. There were six Wooldridge Terra Cobras and five Caterpillar DW20's, with three Allis-Chalmers HD-19 tractors with torque converters to assist in the push loading.

A sand backfill was hauled in around the drainpipe as fill progressed. Excavated material was spread by hauling units in lifts approximately 6 inches deep, watered if necessary from 3,000-gallon tank trailers, and rolled by Wooldridge and Southwest sheepfoot units. Density checks were run from time to time to make sure the uniform 90 per cent was secured. The subgrade and cut sections were finished out to close tolerance by Fisher's organization, and the 8-inch select granular subbase material was also applied and compacted. Special compaction attention was given to the bottom 4 inches of this material, since plans called for a later cement treatment.

Cement-Treated Base

The application of portland cement to the base-course material called for good coordination of heavy equipment units, because mixing and injecting had to be done according to a strict sequence.

When the two lines of header had been set by a crew consisting of a foreman and about 30 men, a D8-drawn Lewis subgrader moved in to make the final subgrade before the cement treatment began. The granular subbase had been left slightly high to give the machine something to work against. Excess material was moved ahead to be re-used in parts of the base farther up the road. When the Lewis subgrader had finished its work, the same D8 was used to pull a windrow sizer, which gathered the top 4 inches of material together for the injection of cement.

Monolith portland cement from the Tehachapi plant was used in bulk, and injected by a cement distributor mounted on a truck chassis. The 2½ per cent cement content was applied in one pass, and the percentage carefully checked by balancing the cement weight distributed against the length of windrow covered.

Mixing was accomplished in a single pass by a D8-drawn Wood Roadmixer. Necessary moisture was also added at this point by tank trucks which were hooked to the Wood machine by hose. Following the mixing operation, which



Ray Day Photo

A 1¼-yard McCaffrey clam bucket charges the bins of the Conveyco batching plant for the paving on Claude Fisher Co.'s \$1,250,000 contract.

progressed at the average rate of 18 fpm, a D8 and a leveling plane smoothed the material back down between the headers.

An initial breakdown roll was made by a 12-ton 3-wheel Galion machine, and the ironing-out was done by a tandem 6 to 8-ton Buffalo-Springfield roller. Finish rolling was done by a Buffalo-Springfield 6 to 8-ton machine equipped with rubber tires, which pressed down any surface irregularities and built compaction all the way to the top of the subbase. While this machine worked, a water truck usually applied a fast fog coat of moisture to keep the surface from hydrating.

Following final compaction, the Lewis subgrader made a last pass to shave the grade to exact elevation, and the tiny areas next to the headers were trimmed by hand. A re-rolling by a light rubber-tire roller and an emulsion-asphalt seal coat applied by a Littleford 600-gallon distributor at the

(Continued on next page)



Here an H-3 sets a 4,800-lb. section of 30-in. pipe. Note that with boom telescope retracted, crane works easily under trees.

Precision Control Hydrocrane

"Cushions"

Pipe Into Place

With every crane function fully hydraulic, operator can meter power flow so slowly you can barely see the load move — or he can speed operation to provide a fast, even work pace.

Here's what hydraulic action and pin-point control can mean to you:

TELESCOPING BOOM noses under branches, wires, into windows, freight cars — without moving crane an inch. Pipe sections, valves, hydrants can be eased into place quickly, accurately without damaging trees, power lines.

"DEADMAN CONTROL" provides automatic protection for pipe crews. If operator should let go, lever returns to neutral — load stops dead. Pipe can be inched into place with greater safety to men.

EMERGENCY STAND-BY. Crane's 50 mph. top speed cuts travel time on leak repairs. Fast action hydraulic outriggers extend in seconds — provide a firm, solid base, even on rough ground.

SIMPLE TO OPERATE. Hand levers only — no tricky hand-foot coordination, no brakes and clutches to grab or slip. That's why inexperienced men become proficient Hydrocrane operators in amazingly short time.

Two sizes — ¼-yd. 2-ton, ⅜-yd. 3-ton. Attachments include clamshell, crane hook, 1-yd. material handling bucket, catch basin bucket, grapples, magnet.

BUCYRUS-ERIE HYDROCRANE DIVISION
South Milwaukee, Wisconsin

Gentlemen: ☐ Please send Hydrocrane literature.
☐ I want a Hydrocrane demonstration.

Name.....

Company.....

Address.....

City..... State.....

BUCYRUS-ERIE HYDROCRANE DIVISION
South Milwaukee, Wisconsin 53081

Winding 3-Lane Road Now a Modern Freeway

(Continued from preceding page)

rate of a gallon every 10 square yards completed the treatment.

Batch Plant and Mix Design

On a project the size of this, the California Division of Highways requires extraordinarily accurate control of batching, and manual-type plants are not permitted. A materials subcontract was arranged with Consolidated Rock Products Co. of Los Angeles for the concrete ingredients and batching, to take advantage of Consolidated's experience and equipment in work of this kind.

The batch plant was a Conveyco fully automatic rig, consisting of a 2,000-barrel cement-storage silo and a 4-bin automatic batch plant. Automatic weighing on a cumulative basis was done by intercepting with electronic "eyes" the pointer on a Kron dial scale. The electronic eyes instantly shut off the flow of one size of material and turned on the next, until the entire aggregate content for a concrete batch was weighed out in a dump hopper.

Three sizes of rock aggregates and sand were supplied by Consolidated Rock from one of its closest commercial plants near San Fernando, and trucked in to the site. Monolith bulk cement, Type I, was trucked from Tehachapi. Approximately 550 cubic yards of aggregates had to be handled each day. They were dumped in separate stockpiles by the side of the batch plant, and loaded to the bins by a 1¼-yard McCaffrey clamshell bucket on a Koehring crane.

Batches of dry-mix material, correctly proportioned, were hauled from the plant out to the paver by GMC 4-batch trucks owned by J. E. Had-dock, Ltd. The plant was set up on the south side of the highway near the project midpoint, where batch trucks could have access in the right sequence to the new paving. By setting the batch plant up on the south side of the project, Fisher's management made sure batch trucks could use the existing highway and would not have to cross over any of the new pavement strips.

Typical sieve analyses of the various sizes of aggregate are given in the following tabulation.

No. 1:	
Size Screen	Per Cent Passing
3-inch	100
2½-inch	90-100
2-inch	35-70
1½-inch	0-15
¾-inch	0-5
No. 200	0-2
No. 2:	
2-inch	100
1½-inch	90-100
1-inch	20-55
¾-inch	0-15
¾-inch	0-5
No. 200	0-2
No. 3:	
1½-inch	100
1-inch	90-100
¾-inch	60-85
¾-inch	15-40
No. 4	0-15
No. 8	0-5
No. 200	0-2
Sand:	
¾-inch	100
No. 4	90-100
No. 8	65-90
No. 16	45-70
No. 30	25-45
No. 50	10-20
No. 100	2-8
No. 200	0-4
Combined Mixture:	
Size Screen	Per Cent Passing
3-inch	100
2½-inch	95-100
2-inch	80-95
1½-inch	65-87
1-inch	50-75
¾-inch	45-66
¾-inch	38-55
No. 4	30-45
No. 8	23-35
No. 16	17-27
No. 30	10-17
No. 50	4-9
No. 100	0-3
No. 200	0-2

Dry-batch design weights were based on the following formula to get a batch yielding 1½ cubic yards:

Cement	648 lbs.
Sand	1,614 lbs.
No. 3	1,012 lbs.
No. 2	370 lbs.
No. 1	1,614 lbs.

Concrete Paving

Since it was necessary to string out over long sections to place up to 3,000 linear feet in a shift, plenty of steel forms were indicated. Approximately 20,000 linear feet of Blaw-Knox 8-inch forms were used for the formation of the 12-foot strips. The northbound right-hand lane, on the outer side of the new highway, was set first, followed by the lane next to the median strip on the second pass. Approximately 6 men, working with a small compressor and air guns, set the forms and drove the pins through the subbase. Very little tamping was necessary, because the subbase had been constructed exactly to grade.

Because of pavement joints, some attention had to be given to the forms. Jointing consisted of a mastic contraction key every 15 feet, and since this

was cut transversely in the fresh concrete, no provision had to be made on the forms themselves. The longitudinal construction keyway between lanes, however, required a construction keyway one-third the total thickness of the slab, with steel dowel bars ¾ x 32 inches in size. The keyway was formed by bolting a small steel channel to the sides of the forms. Half the dowel bar, or a piece 16 inches long, was then

installed by screwing it to a nut inside the keyway. When the forms were stripped, this left the nut exposed for the other half of the dowel bar.

One paver was used. It was a Rex dual-drum 34-E machine, equipped with standard boom and bucket. Generally speaking, it traveled along outside the forms on the subbase. Mixing water came from a well close to the

(Concluded on next page)

Heavy-Duty POWER CORDS

ALL RUBBER . . . FLEXIBLE. Made of rugged military cordage approximating civilian **2 Conductor #14**

Complete with cord clamp, spring action plug and heavy duty female connector.

50 Ft. Set only
POSTPAID. \$5.95 ea.

100 Ft. Set only
POSTPAID. \$9.95 ea.



Distributors Wanted—
write for details

Kingsdown Cable & Wire Co., Cords Dept., 245 Dodge Av., Evanston, Ill.

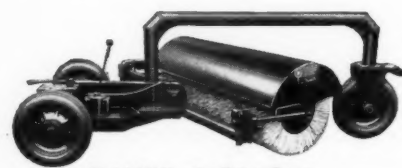
LITTLEFORD ROAD BROOMS

GIVE HYDRAULIC

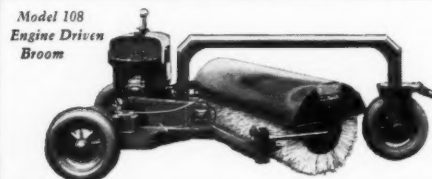
BROOM TENSION . . .

SAVING WEAR ON THE BRUSH . . . GIVE ECONOMY IN HIGHWAY SWEEPING

When you're putting your money on the line for new Road Equipment, naturally you want the most efficient and economical units available. Where can you get more for your dollar when investing it in a Littleford Road Broom? Here is the only Road Broom with Patented Hydraulic raising and lowering system; this arrangement saves dollar upon dollar in brush replacement. The tension on the brush can easily be adjusted to the road surface which reduces brush wear. This is only one of the many features found on either the Engine Driven or Traction Driven Broom. Remember the LB sign means Littleford Bros. and Lower Budgets for the best in road equipment.



Model 106 Traction Driven Broom



Model 108
Engine Driven
Broom

Seeing is Believing!

See how TRI-LINE Concrete Cutters can save you . . .
time . . . labor . . . money . . .

- On ✓ sawed contraction joints
 - ✓ Street, highway and airport maintenance
 - ✓ Street and highway widening projects
 - ✓ Water main and sewer installation
 - ✓ Building maintenance and construction
- AND A HOST OF OTHER APPLICATIONS

States, counties and cities everywhere are demanding concrete cutting on every kind of pavement work. Road-building contractors are choosing TRI-LINE CONCRETE CUTTERS because they save valuable time—cut labor costs on every job—and reduce material costs as much as 50%. Let us show you why TRI-LINE CONCRETE CUTTERS are being used on more new jobs every day. Write for descriptive literature and name of our nearest Dealer. We will be happy to demonstrate TRI-LINE CONCRETE CUTTERS on your own projects without cost or obligation.

Tri-Line Concrete Cutters — Best By Actual Test

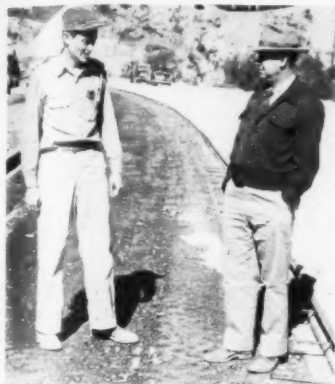
TRI-LINE COMPANY

959 Carroll Street

Racine, Wisconsin



at inside
ns were
osed for
s a Rex
quipped
t. Gen-
ing out-
Mixing
e to the
)



Ray Day Photo

Concrete Technician Don Frischer (left) discusses the concrete mix with Resident Engineer C. E. Dresser.

job, and was hauled by a 2,000-gallon tank, truck-mounted. The paver was unusually accessible to batch trucks, which simply used the existing highway from the batch plant and cut in to the machine wherever it was working. A flagman was used wherever sight distance was the least bit impaired.

The paving-machine lineup included a Jaeger-Lakewood 12-foot concrete spreader, a Jaeger-Lakewood tamper, and a Madsen-built Johnson float finisher, in that order. Wooden screeds for the Johnson float finisher were selected without knots, to insure a smooth job. The presence of knots in wooden screeds often causes an uneven finish, as softer wood erodes around the harder knot. One set of screeds was sufficient to finish this project.

Vibration was accomplished by mounting a Viber internal-type machine on each corner of the tamping machine to work the form lines. California specifications require surface tamping also, so a reciprocating-type tamping bar was used to knead the bigger rock particles down into the concrete surface. So good a finishing job was done by the machines that only three cement finishers were employed. They dressed the form edges and performed a limited amount of long-handled-float work. The concrete surface was sprayed with Hunt Process gray-pigmented curing solution. During three different periods (8 days) of cold weather, when temperatures dropped close to or below the freezing mark, the surface was protected with an earth blanket.

The installation of transverse contraction joints by driving a T-knife into the surface may soon be outmoded in California. Extensive use of concrete saws to cut the joints will probably take over. The contraction joints will not be cut square across, either—they will be skewed so both wheels of a vehicle will not be on the joint at the same time.

Forms were pulled by a rented truck crane, usually a Lorain supplied by Pacific Crane & Rigging Co. Insofar as possible, forms poured one day were moved ahead the next. Work by the subcontractor moved ahead at a placing rate of about 300 to 350 cubic yards per shift.

By May 15 a fine new divided highway will be a reality, replacing the inadequate road which caused many a driver to gamble dangerously. There is a wrecking yard at Newhall filled with smashed vehicles, many of which saw their last service up on the Weldon Canyon route, and the ambulance at this point has hauled many an injured person to a hospital. Strangely—or perhaps grimly—official statistics show the Weldon Canyon section to be far safer than the 5-mile grade, farther north, above Castaic.

Personnel

The California Division of Highways is headed by George T. McCoy, State Highway Engineer, and the project was

under the supervision of District 7, Los Angeles, with P. O. Harding, Assistant State Highway Engineer, in charge. Field operations were supervised by C. E. Dresser, Resident Engineer.

George Peterson supervised the field operations of Claude Fisher Co. and coordinated the subcontract items.

Material-Handling Data

A 32-page catalog on its complete line of equipment has been issued by American Hoist & Derrick Co., 63 S. Robert St., St. Paul 1, Minn. It covers giant Revolver cranes, locomotive cranes, hoists, material elevators, car pullers, and Crosby wire-rope clips.

The catalog includes many on-the-job photos of material-handling installations. It gives brief descriptions and applications, and lists individual catalogs on each item.

This literature may be obtained from the company by requesting Catalog GC-2, or by using the Request Card at page 16. Circle No. 946.



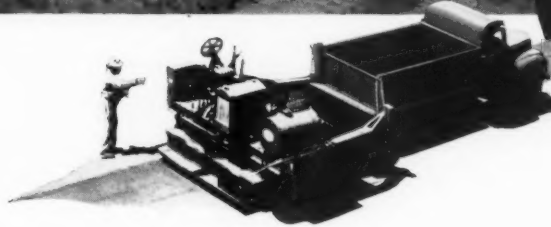
Setting up Outside Form of Battered Wall, James Leck, Minneapolis, General Contractor

Symons Forms for Battered Walls

Battered walls are constructed similar to vertical walls, the only difference being a variation in tie lengths. Ties are placed when inside form is erected . . . outside wall is locked to ties with the same connecting bolts and wedges that bind panels together.

Send plans for your next job and get complete layout and cost sheet—no obligation. Symons Clamp & Mfg. Co., 4251-C2 Diversey Avenue, Chicago 39, Illinois.

The best BLACK TOP PAVER to own—and WHY!



IT IS the all 'round ability and versatility that makes a piece of equipment profitable—versatility that will keep it busy earning money—one kind of job today, another tomorrow!

Your Adnun Black Top Paver brings you a design that assures lower cost operation and makes possible the handling of a range of jobs no other similar piece of equipment can do.

- ★ Your Adnun is the only black top paver unconditionally recommended for laying all asphaltic mixes and spreading any type of aggregate. The Adnun will spread aggregate at lower cost than by blade and tail gate.
- ★ With Adnun retractable wheels it can be moved speedily and easily under its own power or by truck tow.
- ★ Continuous Course Correction means smooth pavement automatically and instant correction of error. With mechanical control you are assured of the maintenance of adjustments.
- ★ Overlapping Cutter Bar action makes the Adnun the only black top spreader that assures a positive joint under pressure—safer driving for the public.
- ★ Solid construction eliminates repeated rebuilding. Modern design reduces adjustment. Electric Sced Heater eliminates danger of poorly protected oil burners to crew.
- ★ Wheel Steering and positive traction on both front wheels and rollers along with greater engine horsepower, gives easier control and greater accuracy.
- ★ Adnun gives a wider range of course width and has laid up to 13 ft.

These are but a part of the many advantages that Adnun offers. Get more details. Ask for the booklet, "11 Basic Things . . ." It may give you some new thinking on Black Top Pavers.

THE FOOTE COMPANY, INC.

Subsidiary of Blaw-Knox Co.
1922 State Street, Nunda, New York



ADNUN

TRADE MARK REGISTERED

BLACK TOP PAVER

No Quick End in Sight For Engineer Shortage

The current shortage of engineers will be worse before it's better, according to Dr. John T. Rettaliata, President of Illinois Institute of Technology.

Addressing an education conference last March, Dr. Rettaliata spoke on "Education and a World in Conflict". As factors causing the shortage, he cited the low birthrate in depression years; the draft; and an erroneous statement made in 1950 by the Bureau of Labor Statistics to the effect that there was an oversupply of engineers. Last year, out of a demand for between 60,000 and 70,000 engineering graduates, only some 38,000 graduated from engineering colleges, and the armed forces absorbed a large percentage of these. In September, 1950, only 29,000 freshmen entered engineering institutions. With normal attrition, said Dr. Rettaliata, this will result in about 17,000 graduates in 1954. Taking the Illinois Tech's February engineering graduation class as an example of how great the demand is, Dr. Rettaliata said that each student had four or five offers of jobs to choose from and could have had more. For those with a bachelor's degree, the average salary was \$320 per month.

On the one hand, industry needs increasing numbers of engineers to complete defense orders, while, on the other, large military forces are snapping up engineering graduates for selective service. How to make ends meet? "It must be recognized that we

are a nation of limited manpower", said Dr. Rettaliata. "Our advantage lies in our superior technological and scientific development. We must employ the talents of our people in the most efficient manner in the interest of national security. Let us not commit again some of the blunders of World War II, where the waste of brainpower in the services, in some instances, was disgraceful."

Philadelphia Builder Gets Georgetown Award

John McShain, Philadelphia builder, recently received a distinguished-service award from the Alumni Association of Georgetown University, Washington, D. C.

Mr. McShain (Georgetown Class of 1922) has many important buildings to his credit, the most recent of which is the remodeled White House. His list also includes: the Pentagon; the Jefferson Memorial; Bethesda Naval Hospital; the General Accounting Office; the Bureau of Engraving; the new State Department building; Georgetown's new McDonough Memorial Gymnasium; the Army Map Center; the National Institutes of Health; and Washington National Airport. *Nation's Business* wrote in a recent profile of Mr. McShain: "Not since the early 1790's, when George Washington commissioned Pierre Charles L'Enfant, a French engineer, to lay out the city, has any one man left his mark so often and so indelibly on the size and shape of the capital."

Granite Curbs and Blocks

A catalog on a line of granite products has been prepared by H. E. Fletcher Co., West Chelmsford 2, Mass. It illustrates and gives specifications for curb, slope edging, pavement blocks, bound posts, curb inlets, and foundations.

The company points out that granite curb has a long life, good visibility, pleasing appearance, and can always be salvaged. Several types are made for roads and bridges to suit the color of the landscape.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 888.



WELLMAN easy handling of large stones

• Those big stones won't slip from the Wellman Stone Grab. Four-part closing cable reeving develops tremendous closing force on stones. Model shown has 5-ton capacity, 4½ foot jaw spread. Other capacities available.

Want Facts?

Send for free
descriptive bulletins.

THE WELLMAN ENGINEERING CO.

7000 CENTRAL AVENUE • CLEVELAND 4, OHIO

STONE AND WOOD GRABS • CLAMSHELL, DRAGLINE, CUSTOM-BUILT BUCKETS

SASGEN
New
Electric-Powered
**CHAMPION
DERRICK**

Boom only can be supplied for use with old-style Mast and bottom

Single line cap. 3062' @ 100 feet per minute

Double line cap. 6062' @ 50 feet per minute

The most complete line of contractors' derricks, hoists, and winches. Write for catalog.

The Sasgen line is handled by leading equipment distributors everywhere.

SASGEN DERRICK COMPANY
3131 W. Grand Avenue, Chicago 22, Illinois

Self-Propelled Drop Hammer

A 4-page bulletin describing a self-propelled drop hammer is issued by Ottawa Steel Products, Inc., Ottawa 60, Kans. It illustrates the Hydra-Hammer tamping trenches, breaking concrete slabs, cutting trench lines through asphalt, and stabilizing shoulders.

The unit consists of an adjustable sliding tower mounted on a 4-wheel carriage. The hydraulically controlled hammer falls 30 times per minute and delivers an impact of 4,000 foot-pounds. A 21-hp gasoline engine powers the hammer and propels the machine at 14 mph.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 872.

DO YOU FURNISH HOUSING AND FEEDING FACILITIES FOR YOUR CONSTRUCTION CREWS?

**INTERSTATE BEDDING COMPANY IS YOUR ONE COMPLETE
SOURCE FOR ALL OF YOUR HOUSING & FEEDING NEEDS!**

FOR SALE or FOR RENT

Interstate Bedding Co. can furnish you with the proper housing and feeding equipment for your workers — no matter how large or small a number . . . no matter where they are located . . . no matter what the climatic conditions! Interstate Bedding Co. manufactures practically all of their own equipment — assuring you of the fastest service at the lowest costs. *Interstate's equipment is available to you on a Rental basis . . . or for outright sale.*

INTERSTATE BEDDING CO. CAN SUPPLY YOU WITH:

- **HOUSING** — Tents: 2-man, 4-man, 8-man, and Field Tents.
- **BEDDING** — Comforters, Canvas Cots, Steel Cots, Blankets, Sleeping Bags, Double Deck Bunks, Sheets, Mattresses, Mattress Covers, Pillow Cases, Straw Ticks, Towels.
- **FEEDING EQUIPMENT** — Field Stoves, Cooking Utensils, Serving and Flat Ware, Refrigeration.
- **TABLES** — CHAIRS — WASH BASINS.

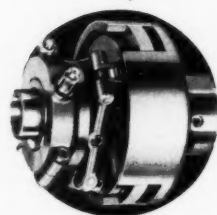
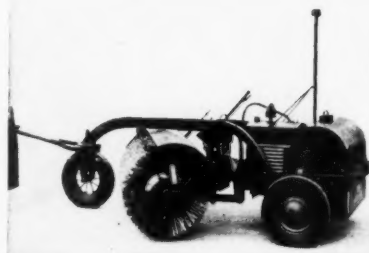
24-HOUR SERVICE — WRITE • WIRE • PHONE

INTERSTATE BEDDING CO., Dept. H

1621 W. Carroll Ave., Chicago 12, Illinois

Phone: CHesapeake 3-4660

Sweeps Either Way and



—Blows All Dust Away

The Grace Two-Way Sweeper not only sweeps loose material either to the right or left, but blows the dust off road surfaces before asphalt is applied. **ROCKFORD CLUTCHES** regulate power transmission in this efficient road-building unit. You can benefit from **ROCKFORD** clutch engineers' experience in this field when you design your new models.

ROCKFORD CLUTCH DIVISION ROYAL WAGNER

314 Catherine Street, Rockford, Illinois, U.S.A.

ROCKFORD CLUTCHES



**B-W
ENGINEERING
MAKES IT
WORK
B-W
PRODUCTION
MAKES IT
AVAILABLE**



**ENGINEERING
BULLETIN
SENT ON
REQUEST**

MONTHLY

t granite
visibility,
ways be
made for
color of

ned from
Request
3.

won't
lman
-part
eving
dous
ones.
5-ton
t jaw
paci-

CO.
OHIO

UCKETS

W
ERING
S IT
RK
W
CTION
S IT
ABLE

W
ERING
S IT
RK
W
CTION
S IT
ABLE

ERING
ON
EST

S

Use the
Request Cards
Between
Pages 16 & 17
To Obtain
Further
Information
or Printed
Matter on
Any Product
Advertised
or Described
Editorially
in This
Issue

Use the
Request Cards
Between
Pages 16 & 17
To Obtain
Further
Information
or Printed
Matter on
Any Product
Advertised
or Described
Editorially
in This
Issue

M
Y
fu
fre
run
con
sup
say
Se
sio
Ch
T
wa
and
gra
ma
am
wh
wor
fuel
Eith
is a
und
con
den
eith
a d
peri
men
suct
of th
of s
fuel
othe
in t
and
care
hang
in a
water
M
fuel
stor
of fu
kero
quan
fuel
bette
else
watch
tract
mula
good
place
An
fuel
tions
these
syste
filter
effici
enter
the p
finest
cease
no ri
says
the
stop
chan
the t
and
filter
howe
have
suppl
An
quest

NE
ERE
SI
LOV
NOR
478

Your Diesel's Diet: Clean Fuel and Air

A diesel is a modest feeder where fuel is concerned, but a demon for fresh air, which it sucks in like a mile runner on the last lap. There's nothing complicated about a diesel's "food supply"—just clean fuel and clean air, says Fred J. Shreck, Supervisor of Service in the Industrial Power Division of International Harvester Co., Chicago, Ill.

Take fuel first. It doesn't make sense, warns Mr. Shreck, to use inferior fuels and thereby lose power. Always use the grade of fuel recommended by the manufacturer. It will produce the amount of horsepower at the drawbar which the manufacturer guarantees, while substitutes that are "just as good" won't. Now you've bought your good fuel, be sure you store it carefully. Either above or below-ground storage is all right, but the latter is best because underground temperatures are more constant and there will be less condensation in the tank. However, in either case it is a good thing to provide a drain at the base of the tank for periodic removal of the water and sediment that settles there. The pump suction pipe should not reach this part of the tank so there will be no chance of sucking up water when pumping fuel from the tank into tractors or other machinery. Put a screen filter in the filler neck of the storage tank and, of course, keep the filler opening carefully capped. Another tip is to hang the nozzle of the fuel-tank hose in a protected place so that dirt and water cannot enter the supply.

Mr. Shreck warns against emptying fuel from small containers into the storage tank, since these small amounts of fuel often contain some gasoline or kerosene, which, even in very small quantities, can contaminate the entire fuel supply in the storage tank. Much better, use this fuel to wash parts, or else dispose of it. Another thing: watch the glass water trap in your tractor engine. If water is rapidly accumulating in these traps, it's a pretty good sign that contamination is taking place where the fuel is stored.

And last on the fuel checklist are the fuel filters. All the foregoing precautions add to the life and efficiency of these filters, which guard the injection systems of your diesel engines. Fuel filters must be nearly 100 per cent efficient to prevent foreign matter from entering the injection system, where the precision tolerances (finer than the finest watch) cannot accept it and will cease to work if it gets in. There are no rigid rules for changing fuel filters, says Mr. Shreck, but low readings on the fuel-pressure gage indicate a stopped-up fuel filter. If it has to be changed, be careful to replace it with the type approved by the manufacturer, and insure positive sealing so that the filter will work efficiently. Fuel filters, however, are not cheap, and you won't have to change them often if your fuel supply is properly stored and cared for.

And now we come to that important question of air. A diesel must have



Dusty air like this means bad breathing for your diesel engine.

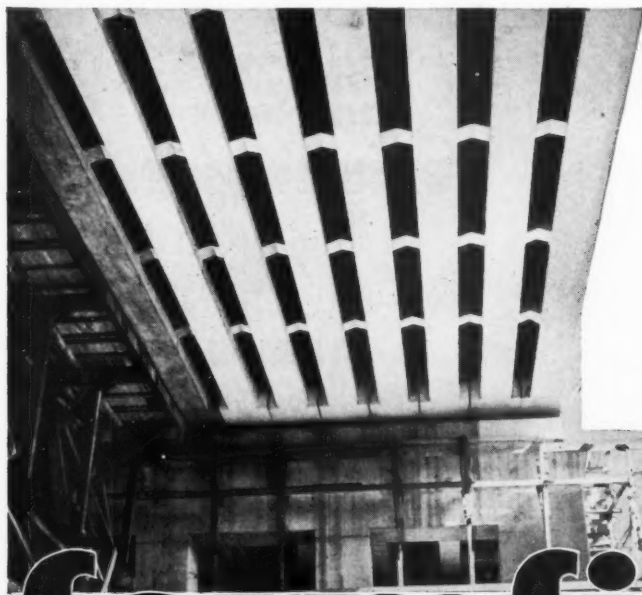
clean air to breathe or it will choke. How to keep the air clean? Diesel manufacturers design and build adequate air cleaners into their products, but on many construction jobs the air is extremely dusty, so it is a good idea to extend the air-cleaner intake pipe so that it will reach the cleaner air above the dust level. Extended air-cleaner pipes do not tend to smother

an engine, as is sometimes claimed, says Mr. Shreck. On the contrary, there is a greater column of air in the extended pipe. Under dusty operating conditions, it is important to clean out the air cleaner at frequent intervals. Remove and wash the oil tray and then fill it to the proper level with the manufacturer's recommended weight of oil. But that is not enough. Don't for-

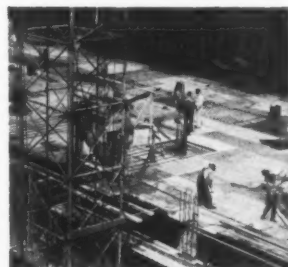
get to remove the screens in the upper portion of the air cleaner and wash them in kerosene before replacing them. Why not use the owner's manual and follow the manufacturer's instructions there?

The air cleaner is not the only danger spot where dirty air can enter. For instance, leaks are likely to develop at the connection between the air cleaner and the intake manifold and between the intake manifold and the cylinder head, which is sealed by gaskets. Check these points at frequent intervals by taking an oil "squirt" can filled with water or kerosene and squirting this fluid around the joints. If any liquid is sucked into the engine, that means there is an air leak at that spot. Immediate repair is called for, to prevent serious engine damage.

"Keep 'em Clean" is Mr. Shreck's watchword, meaning fuel and air. It doesn't take long to give proper attention to the devices specially designed for the protection of the fuel and air supply. And it will pay off.



clean, smooth beams and piers of pre-stressed concrete



smooth concrete industrial building surfaces

to produce a clean, smooth concrete finish use

formfilm

THE PROTECTIVE COATING FOR PLYWOOD FORMS



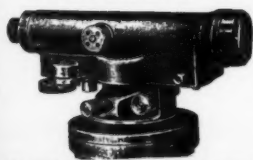
freedom from staining on apartment project

All over America contractors report that Formfilm is the practical and economical answer for the protective coating of valuable plywood forms. Since it is easily applied and reapplied on the job, Formfilm has many advantages over any other protective finish for concrete forms. Heavy scratches for instance, can be quickly recoated when Formfilm is used at the job. Formfilm is now being widely used in "tilt-up" construction.

ADVANTAGES OF FORMFILM

- Increases speed of form handling
- Increases use of forms without recoating
- Increases life of forms—no grain raising
- Eliminates all disadvantages of oil or oil deposits on concrete
- Cleaner, smoother surfaces at minimum rubbing cost.

FENNEL'S



NEW 3280' PRECISE LEVEL
ERECTING EYEPIECE — FULL CIRCLE
LEVELING BY TILTING SCREW
SEND YOUR TRANSITS & LEVELS
TO US FOR REPAIRS
LOWEST PRICES • 3 DAYS' SERVICE
MORBERT DIENSTFREY, U. S. Agent
478 Water Street New York 2, N.Y.

HORN

A. C. HORN COMPANY, Inc. est. 1897

Manufacturers of materials for building maintenance and construction
LONG ISLAND CITY 1, N. Y. • Los Angeles • San Francisco • Houston
Chicago • Toronto SUBSIDIARY OF SUN CHEMICAL CORP.

A. C. HORN COMPANY, INC.,
Long Island City 1, N. Y.

Please send me ☐ complete data on FORMFILM



☐ free copy of your 96-page Construction Data Handbook



CEM-2

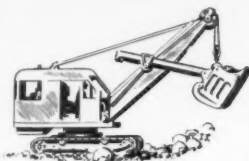
NAME _____ TITLE _____

FIRM NAME _____

ADDRESS _____

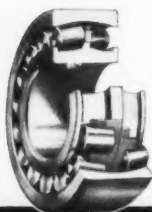
CITY _____ STATE _____

for dependable service...



Torrington Spherical Roller Bearings—used as original equipment on virtually every type of construction machinery—are ideal for any service needs.

These rugged, self-aligning bearings are made from selected quality steel—to precision tolerances, assuring smooth performance and long service life.



THE TORRINGTON COMPANY

South Bend 21, Indiana

Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Straight Roller • Needle • Ball • Needle Rollers

Soil-Compaction Cost Data

A new technical bulletin titled "Cost Data for Soil Compaction in Restricted Areas" has been prepared for contractors and construction engineers by Barco Mfg. Co., 1801 Winnemac Ave., Chicago 40, Ill. The cost figures are based on a survey of actual jobs and are intended to help contractors in preparing bids and maintaining cost records.

In addition to covering direct cost items such as depreciation, interest, insurance, taxes, fuel, and repairs, the bulletin discusses overhead charges and possible variations in conditions on various jobs.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 945.

Form Clamp Co.'s Trademark

Mr. Uni-Form (see the accompanying photo) is the new trademark



Mr. Uni-Form, new trademark of Universal Form Clamp Co.

adopted by Universal Form Clamp Co., Chicago, Ill., to identify its Uni-Form panels. He received top rating in a large field of applicants for the job.

Material-Handling Towers

A catalog offering complete data on single and double-well material-handling towers is announced by American-Tubular Elevator Co., 133 North St., Zelenople, Pa. It gives complete specifications and illustrates boom and rigging layouts.

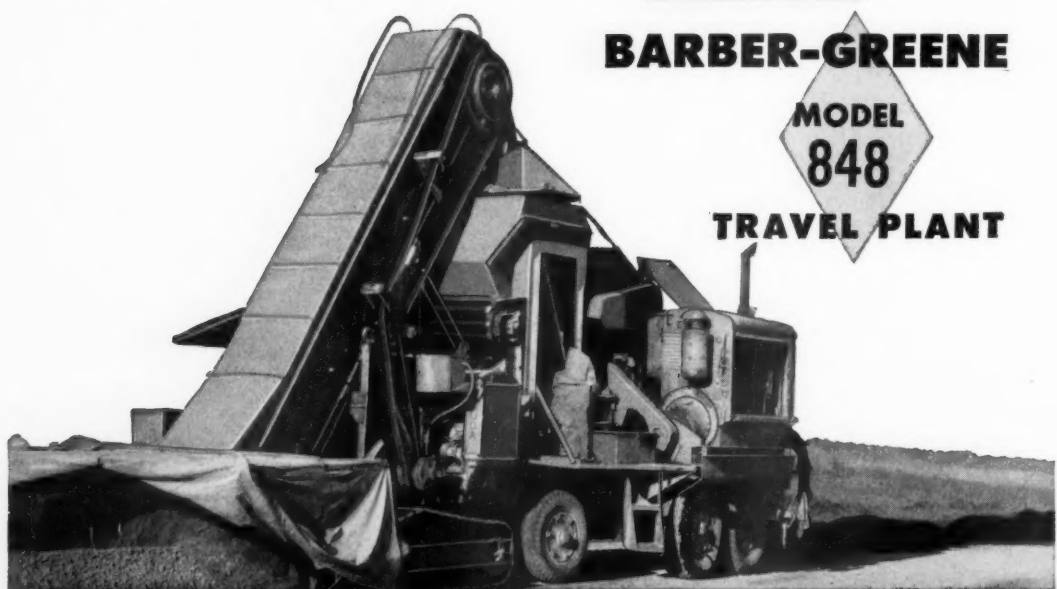
Components required for erecting 3,000 or 5,000-pound-capacity towers are also listed. The towers may be equipped with special concrete-handling equipment which is interchangeable with the conventional platform cage. Material-handling booms of 1,000 or 2,000-pound-capacity can be rigged to the towers.

This literature may be obtained from the company by requesting Catalog 249, or by using the Request Card which is bound in at page 16. Circle No. 901.

Hewitt-Robins Reorganizes

Hewitt-Robins, Inc., New York, N. Y., manufacturer of rubber hose, industrial rubber products, and heavy-bulk materials-conveying and handling systems, has established new executive offices at Glenbrook, Conn. The move has necessitated a reorganization of personnel: Benjamin T. Moffat, a vice president of the company, is now Executive Vice President, with three divisional general managers responsible to him; Harold Von Thaden continues as a vice president and becomes General Manager of the International Division, in addition to the Robins Engineers Division, which he has headed for several years; and Austin Goodyear, formerly Assistant General Manager of the Hewitt Rubber and Robins Conveyors Divisions, is General Manager of both divisions.

Here's the equation for low-cost roads



BARBER-GREENE

MODEL 848

TRAVEL PLANT

**HIGHER MIXING CAPACITY
+ GREATER FLEXIBILITY
+ IMPROVED MIX QUALITY**



TRAVEL PLANT

Increased traffic and higher loads have created a strong demand upon highway departments for better secondary roads. The Barber-Greene Travel Plant is a proved way to put a high quality surface on these roads at lowest cost.

Utilizing the basic, well proved B-G 848 Mixer and Paving Loader—the Travel Plant operation is simple and easily controlled for consistently uniform quality.

Working in one continuous, interlocked oper-

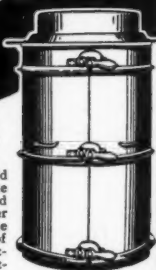
ation, the loader feeds the windrowed aggregate to the mixer where aggregate and bitumen are accurately proportioned . . . thoroughly mixed and discharged in a windrow at rear of machine.

Accurate measurement saves on materials. Close control of mixing, plus twin pug-mill pressure mixing, allows use of heavier cutbacks . . . making possible savings of hundreds of dollars per mile.

Barber-Greene

AURORA, ILLINOIS, U. S. A.

**THE Quinn Standard
FOR
CONCRETE
PIPE**



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers

QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1643-1751 BOONE IA

Road Planer Smooths Bituminous Pavements

Corrugations on State Routes Through Louisville, Ky., Are Removed Swiftly in Preparation for Resurfacing

• LAST season the Kentucky Department of Highways resurfaced several of its state routes through the city of Louisville with a wearing course of bituminous concrete. Before the new surface was laid, however, all bumps, irregularities, and corrugations were first removed from the old pavement with a Universal road planer. The big heat-plane machine also scraped off enough old pavement close to the curbing to maintain an effective depth of gutter after the new surface was put down.

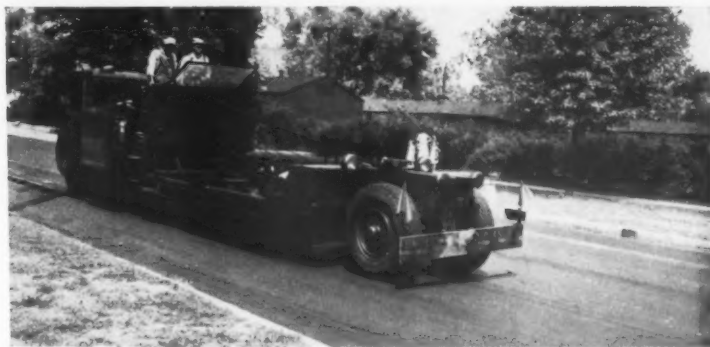
The planing was done quickly and economically for the Highway Department by the Byrnes & Conway Co. of Cincinnati, Ohio, at a unit cost of 36 cents per square yard. Covering portions of several streets of varying width, the contract had an estimated total of 64,000 square yards. The resurfacing that followed was done under a separate contract by H. K. Williams Co., Inc., of Louisville. The entire project was completed during the months of August and September.

The major portion of the work was on the following streets: 12th Street—U. S. 31W; Portland Street—U. S. 31W; Bardstown Road—U. S. 31E and State Route 150; Grinstead Drive—U. S. 60. Existing pavements were all sheet asphalt that had been down 15 years or longer, and were continually subject to heavy traffic. The washboarding of the surface was particularly noticeable at bus stops where the big vehicles had produced a series of ripples and waves in the bituminous pavement.

Road Planer

In smoothing surfaces the Universal road planer heats the pavement and planes off the high and fatty spots while the asphalt is still hot. This is done in a continuous operation that leaves the surface free of waves and excess bitumen. It produces a mosaic nonskid topping without gouging or tearing the pavement itself. On this job, from two to three passes were made over each part of the street, depending on the condition of the surface. Along the curb line, three passes were usually required to bring the pavement down to the desired grade.

Weighing approximately 14 tons, the heat-planer machine is 35 feet 5 inches long x 8 feet wide over-all, and operates at an average working speed of 16 fpm. It has a rear drive with tandem axles, and oversize tires on the four wheels. At the front is the heating hood—8 feet 4 inches long x 4 feet 2 inches



C. & E. M. Photo

A Universal road planer smoothed out the bumps on a Kentucky state route by heating the pavement and planing off high and fatty spots. Byrnes & Conway Co. of Cincinnati was the contractor.

wide—containing eight oil burners with their fire directed down on the pavement. The flames heat the surface thoroughly and uniformly to a depth of 1/4 inch or more with a 2,400-degree-F heat. Burners are set in two rows of

four, lengthwise of the machine, and are raised or lowered by hydraulic controls.

To the rear of the heating hood is a 4-foot 2-inch V-shaped cast-steel cut-

(Concluded on next page)



OVERMAN'S STONE AND BITUMINOUS SPREADER

Favorably Impressed—

Says a leading Contractor in Indiana, with the results by using an Overman Spreader. Checking the unloading time for an 8 to 9-ton truck, from the time the bed was raised, was one and one-half minutes. A remarkable speed to lay and roll 8 to 9 tons of material 3" thick.

WRITE FOR BULLETIN

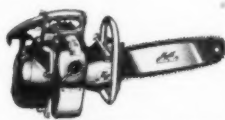
I.J. OVERMAN MFG. CO.
BOX 203 MARION, IND.

Make Costly Manhours More Productive with Mall Portable Power Tools

Less sweat, less muscle, less end-of-the-shift fatigue but more work done—all this adds up to keeping the job on schedule and netting a better return on your contract when Mall Power Tools take over the hard work. Men like the "feel" of these husky, dependable tools and the contractor likes the low-cost maintenance and high scoring heavy-duty service—backed by over 30 years' experience in tool design, production and field testing.



MALL VIBRATORS—Mall concrete vibrators produce better finished concrete at minimum cost. Pneumatic, electric or gasoline engine models. Write for Bulletin 2022.



MALL CHAIN SAWS—Dependable cutting power for hard, soft, wet, dry or frozen wood. Pneumatic, electric or gasoline engine types. 12" to 144" capacity. Write for Bulletin 2066.



MALL DRILLS—Mall Drills have perfect balance, are built for years of service. Pneumatic or electric power. Capacities 1/2" to 1 1/4". Write for Bulletin 2073.

40 Factory-Owned Service Warehouses, Coast to Coast, To Serve Our Customers and Thousands of Dealers

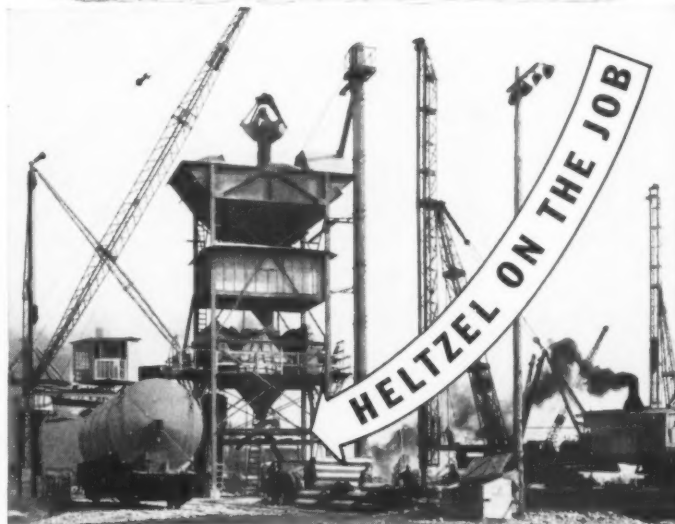
Clip and mail this CHECK LIST for details



Mall TOOL COMPANY

7743 S. Chicago Avenue
Chicago 19, Illinois

HELTZEL HELPS CONSTRUCTION DOLLARS GO FURTHER



with
RAYMOND CONCRETE
PILE COMPANY
at
GREAT LAKES
STEEL
CORPORATION

PROBLEM: High capacity batch plant to simultaneously charge both a pumpcrete operation and a fleet of transit mix trucks.

ANSWER: Heltzel engineered batch plant that worked both pumpcrete and transit mix operations with practical perfection and helped Raymond Concrete Pile Company run ahead of schedule.

• The installation consists of a basic Heltzel 300-ton, 4-compartment plant (three 70-ton aggregate compartments; one 311-bbl. cement compartment); a 70' high, 250-bbl. per hour bulk cement elevator; a 1000-bbl. bulk cement recirculator with 33' 6" screw conveyor; a 2-cubic yard batcher to charge two tilt mixers—front end charging; special columns and braces to take care of height.

ASK FOR HELTZEL BULLETIN K-37 DESCRIBING PLANTS AND ENGINEERING SERVICE FOR CENTRAL MIX, TRANSIT MIX AND CONCRETE PRODUCTS OPERATIONS.



The Heltzel Steel Form & Iron Company

Construction Equipment Since 1910



WARREN, OHIO

Road Planer Smooths Bituminous Pavements

(Continued from preceding page)

ting block with three blades on each side. It is supported on the main frame, and is completely adjustable. The block also has key-wedge cutting-blade attachments for putting in a crown or feathering off edges. Behind the V-block is a consolidating blade that windrows the planed material to the right or left, as desired, and outside the path of the rear traction wheels.

Done Under Traffic

Following closely behind the planer, and straddling the windrow of scraped-up material, came a dump truck. To the rear of the truck was a Case rubber-tired tractor on which was mounted a Lull $\frac{1}{2}$ -yard front-end loader. The loader picked up the heat-softened bitumen that had been planed from the pavement and dumped it into the truck. As soon as one truck was filled another took its place in line. The three machines—planer, truck, and tractor-loader—kept in line one behind the other, with little interruption to traffic.

The State Highway Department had no particular use for the material that was planed off in the smoothing operations, so it was spoiled in dump areas. Later on, when the City did similar work on streets that are not highway routes, the bituminous scrapings were salvaged and spread in alleyways that needed attention.

In the succeeding contract, the streets that were planed off were resurfaced with a single $\frac{1}{4}$ -inch wearing course of bituminous concrete. The work included raising manholes when necessary to meet the new grade.



C. & E. M. Photo

A Lull $\frac{1}{2}$ -yard front-end loader, mounted on a Case tractor, dumps the planed-off bituminous material to a Ford truck.

The Louisville project was under the general supervision of District 3, State Department of Highways, of which W. H. Burton is District Engineer and W. P. Lane is Assistant District Engineer of Construction. Roy H. Hardy was Resident Engineer and Jack Elder, Inspector. The Department is headed by D. H. Bray, State Highway Engineer, with C. B. Owens, Director of Construction, and M. Forrest Johnson, Director of Maintenance.

Data on Steel Scaffolding

A package file of all Waco standard literature, catalog sheets, and test data on steel scaffolding has been announced by Wilson-Albrecht Co., Inc., 3565 Wooddale Ave., Minneapolis 16, Minn. Made of heavy enamel-cardboard stock, the $8\frac{1}{2}$ x 11-inch folder is distributed as a permanent file for

monthly mailings of Waco literature and other information on scaffold erection, use, safety measures, etc. At least 12 of these mailings will be made

to holders of the files during 1952.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 919.

An Aluminum Filler

A synthetic metal filler that dries hard and is applied fresh from the can with a putty knife is produced by A. L. Okun Co., 148-26 58th Ave., Flushing 55, N. Y. No-Torch cold solder consists of powdered aluminum in a quick-drying nonsoluble liquid. It is supplied in a semifluid state. When the liquid evaporates, the deposited aluminum hardens into a surface that will not crack, chip, or peel, the company claims.

No-Torch may also be brushed or sprayed on when thinned with a special solvent. The coating can be used for filling seams, stopping leaks, and similar applications.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 916.

ON-THE-JOB CUTTING OF REINFORCING ROD Made Easy!



Model 20-A Integral Hand Pump

PORTABLE, HYDRAULIC

CUTS $\frac{3}{4}$ " REINFORCING ROD

CUTS 1" LOG CHAIN

WEIGHS ONLY 45 LBS.

NEW MANCO

"GUILLOTINE"

Big-capacity, self-contained portable hydraulic cutter with "C" frame open anvil. Also cuts chain and steel rod, as well as square and hex-shaped material. Other models to cut wire rope, cable.

Easy hydraulic hand pump action (similar to bicycle pump). Operator uses his weight, not his strength, to make cut. Positive automatic blade retraction.

Latest type oil seals positively prevent leakage at both maximum pressure and no pressure. Safety-relief valve prevents overloading.



Model 20-D Compressed Air Hydraulic Pump

AVAILABLE WITH COMPRESSED AIR PUMP 200 CUTS PER HOUR

Press pedal for automatic cutting. Air hydraulic pump assembly operates off any source of compressed air supplying 100 lbs. pressure. Uses 16 cubic feet per minute.

REPRESENTATIVES

Several good territories available on Manco Guillotine line. Please give complete statement of qualifications when writing.

SEND COUPON For Complete Information and Prices

MANCO MFG. CO. BRADLEY, ILLINOIS

MANCO MANUFACTURING CO. Bradley, Illinois

CE-5

Gentlemen: Please send me complete information and prices on The Manco Guillotine.

Name _____

Firm _____

Address _____

City _____

Zone _____ State _____

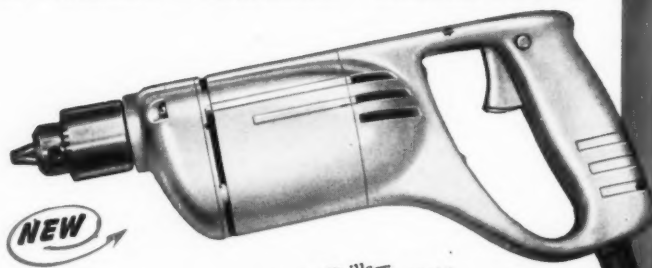
The Greatest News For Electric Drill Users



SUPER DUTY

PORTABLE ELECTRIC DRILLS

For Production—Maintenance—Construction Work



SUPERDUTY DRILLS OFFER

Reserve Power • Ball and Needle Bearings • Heat-treated, Precision-cut Gears • Compact, Streamline Design • Electronic Dynamic Balancing • Top Quality, Rugged Construction • Models and Styles to meet use requirements and operator preference.

All These Features and at **Lower Cost**

Ask your distributor, or write for complete details to

PORTABLE ELECTRIC TOOLS, INC.

345 West 83rd Street, Chicago 20, Illinois

In Canada: 369 Danforth Road, Toronto 13, Ontario



SUPERDUTY Portable Electric Drills

for Production • Maintenance • Construction Work



Latest addition to the Mixermobile Mrs. line is this new Dozermobile. Dozer blade is 98 inches wide and 35 inches high; axle oscillation, 24 inches. For details, circle No. 960 on Request Card at page 16.

Automatic Dispenser Of Calcium Chloride

A 13-gallon dispenser for calcium-chloride solution is manufactured by J-W Materials, Inc., P. O. Box 288, Napoleon, Ohio. It is so arranged that the solution can be pumped from ground level to the supply tank at batching level, and then dispensed into the water or sand by pushing the button on the control timing device.

The equipment consists of a 110-volt 60-cycle pushbutton control timing device, a two-way 110-volt 60-cycle solenoid valve, a welded steel supply tank with float switch and shut-off valves, a line sediment separator, and a close-coupled self-priming motor and pump.

The pushbutton control is mounted where it will be convenient for the mix man to see and operate. The extension cord for operating can be plugged into any 110-volt outlet; the length of the cord does not affect operation. The toggle switch in the lower left-hand corner is an off-on switch for the circuit, so that the unit may be permanently wired into the 110-volt circuit if convenient. The timer resets immediately when the timing cycle is completed. The resetting must, however, be allowed to become complete before pressing the pushbutton; otherwise, the full time set on the timer will not be obtained.

The dispensing unit discharges the amount required in a few seconds. Refilling time of the automatic supply tank depends on the distance the calcium-chloride solution is to be pumped, but complete recovery is made in a matter of seconds. The company recommends that synthetic-rubber hose be used for the supply line from the mixing chamber to the automatic supply tank.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 935.

Bruning Opens New Plant

Charles Bruning Co., Inc., Teterboro, N. J., manufacturer of technical paper, drafting supplies, and Copyflex white-print machines and paper, recently started operations in a new plant at Teterboro, located on a 12½-acre site at the intersection of Huyler and North Streets. The new building houses the

BORINGS & ROCK HOLES

Test Borings, Diamond and Shot Drilling, Inclined Holes, Calyx Drilling for Foundations, Elevators, etc.

GILES DRILLING CORPORATION

2 Park Avenue
Dept. C New York 16, N. Y.
Tel: LExington 2-6834

national management offices, formerly at 100 Reade St., New York, N. Y., as well as the research laboratories and manufacturing operations formerly located in different sites.

Drives 7,000 Miles To Fetch New Grader

Quezaltenango is in the southwest corner of Guatemala and some 3,500 miles from Springfield, Ill., and Detroit, Mich., via the Pan-American Highway through Mexico from Tapachula to Matamoros. However, Juan Luis Arrivillaga did the trip in 12 days to pick up some new equipment.

Mr. Arrivillaga is a contractor who employs 25 men in his construction crew in Quezaltenango. He had placed an order with the Tractor Division of Allis-Chalmers Mfg. Co., Springfield, Ill., for a Model D motor grader. He and his party, which included his son, drove a truck and a car on this enterprising trip; they picked up a new



Juan Luis Arrivillaga drove some 3,500 miles from Quezaltenango, Guatemala, to Springfield, Ill., to take delivery of this Allis-Chalmers Model D motor grader, and he's just about to set off for home. He looks happy about the whole thing.

truck in Detroit and then went to Springfield to take delivery of the motor grader. This safely loaded, the whole party set off, with justifiable pride, on the journey home, where the grader

will be used primarily in road building and maintenance.

Keilhauer Pagram, Allis-Chalmers dealer in Guatemala City, made the sale.

Eaton 2-Speeds are designed and built for simple, low cost maintenance



Eaton 2-Speeds will take years of heavy-duty operation. Eaton's exclusive planetary gearing better distributes gear-tooth loads, and the exclusive forced-feed oiling system provides positive lubrication even at slowest vehicle speeds. Extra rugged construction eliminates the possibility of distortion or misalignment under heaviest loads. When repair is necessary, practical down-to-earth design makes the work quick, easy, and economical. Eaton 2-Speeds also reduce maintenance cost on the vehicle through lower stress and less wear on engines and power transmitting parts. Ask your dealer to explain how Eaton 2-Speeds will help *your* trucks haul more, faster, longer, at less cost.

EATON 2-Speed Truck AXLES

Axle Division

EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

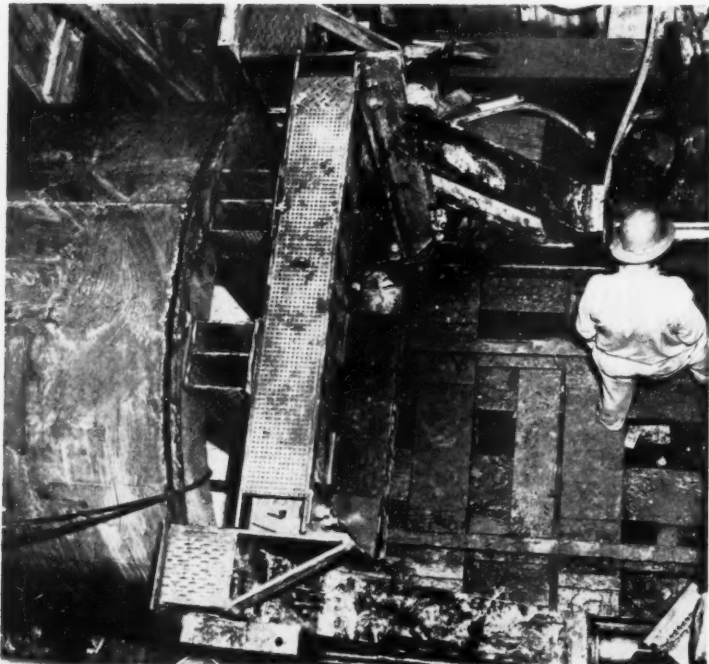


PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

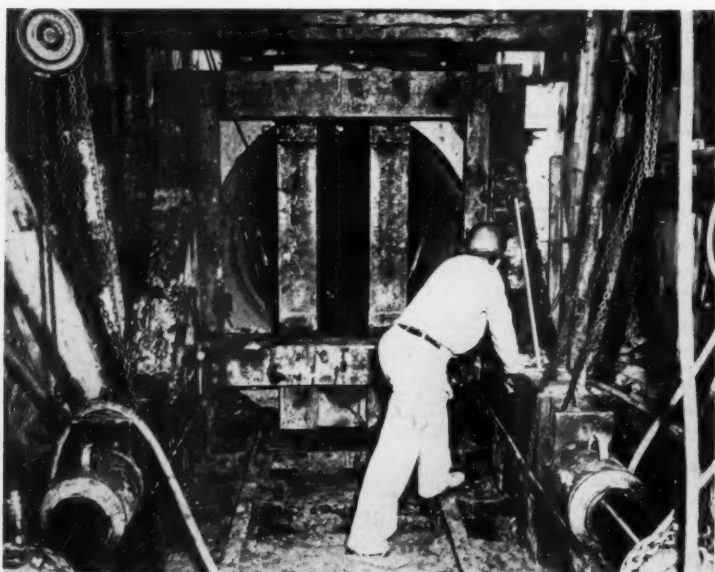
Concrete Sewer Pipe Jacked



1. During the early stages of the Hardin sewer-jacking operations in Maywood, Ill., a mucker fills a shop-built car which will be dumped by crane at ground surface.



2. Looking down the shaft we see a 5-foot section of precast RC pipe being jacked into place, and the jacking frame made of built-up H-beams.



3. Here's a head-on view of the jacking frame which transfers the ram push to six bearing areas on the steel flange ring of the pipe.

Contractor Puts 3,800 Feet of 78-Inch Pipe Into Place By Jacking With 400-Ton Hydraulic Rams

By MICHAEL A. SPRONCK,
Associate Editor

• A MAN-SIZED job, probably the largest jacking operation of its type in the midwest, is under way in Maywood, a suburb of Chicago. The contract, let to George D. Hardin Construction Co., of Chicago, calls for the placement of 3,861 feet of 78-inch-diameter precast reinforced-concrete sewer pipe. The Hardin outfit elected jacking operations in preference to the alternately acceptable mining and shoring to see just what could be accomplished with this method on a large job.

The finished trunk-line sewer will be part of the storm-water drainage facilities for the new Congress Street Expressway. The limited-access divided expressway, depressed in this area, will carry six 12-foot traffic lanes to and from the Chicago Loop area. At the eastern end it will tie in with Wacker Drive, the Calumet Tri-State Expressway, and the Outer Drive. The western terminus is at the Cook County line at Roosevelt Road (17 miles from downtown Chicago) and leads to U. S. 83 and points west.

The three sewer contracts in this area cover 3 miles of storm sewer between Mannheim Road, in the Village of Belwood, and the outfall at the Des Plaines River. The sewer runs west to east on a 0.1 slope, about 100 feet north of what will be the highway center line. Thirty-inch-diameter laterals feed into the trunk every 600 feet along the line. At each end of the Hardin job the 78-inch cylindrical pipe ties in through transition sections to 6-foot 2-inch x 6-foot 10-inch semi-elliptical concrete pipe. These semi-elliptical sections are equivalent in flow capacity to the cylindrical pipe.

The contract was let in February of '51 and work started in April. The spex called for completion in 130 calendar days, but bad soils in some sections made it necessary to extend the time. Though the job is being financed by various road agencies, the work is under the direct supervision of the Cook County Highway Department. Cooperation between the County and the contractor is excellent, since both are interested in learning what advantages and limitations jacking operations have on work of this size.

Rodgers Hydraulic, Inc. Photos

Excavating

The first shaft was excavated at the east end of the contract to the low invert point of the sewer line, 39 feet below the surface. As the job progressed, other shafts were opened up along the line—the last, 34 feet below ground surface. An Owen 1-yard clam on a Link-Belt crane dug the holes, dumping the material into waiting trucks or casting it alongside the shaft. The material was rehandled by various front-end loaders mounted on Caterpillar tractors. The contractor is fortunate in that his yard is only a short distance from the job and he can pull equipment in or out as the work requires.

The shafts are 24 x 14 feet, with the longer dimension along the axis of the tunnel. Their earth walls are braced with 2 x 10 sheeting and 12 x 12 timbers. A 12 x 12 cross brace divides the shaft into two sections, each approximately 12 x 12 feet. The rear section contains the jacking equipment and the forward section is used for pulling up the mucking boxes and lowering the pipe sections.

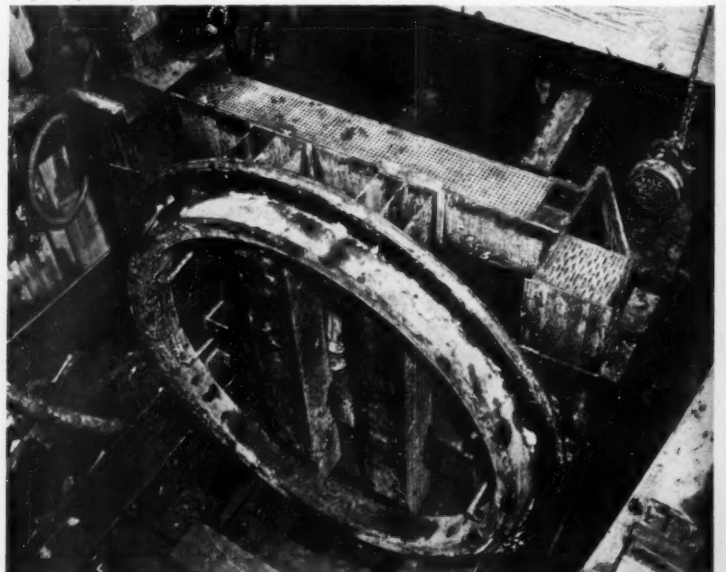
When the first shaft was taken down 40 feet 6 inches, 18 inches below the invert line at this point, the jacking equipment was installed and preliminary mining started. The soil in this area is a firm hardpan with some rock near the invert. The material was cut down with two Chicago Pneumatic clay spades, passed to the muckers, and loaded into shop-built cars: 3 x 6 x 2-foot boxes mounted on 24-gage track wheels. The cars were pushed back to the shaft when full, lifted and dumped by the Link-Belt crane at the surface, and returned to the hole.

The mucking crews worked only 10 feet ahead of the pipe at first. Later this was increased to 15 and 20 feet when it was found that the ground held well. The hole was opened to a diameter just about one inch larger than the outside diameter of the pipe, except at the bottom where the skids were placed.

Jacking Operations

After the hole was opened up a sufficient distance ahead of the previously placed pipe, 2 x 12 timber cross ties were laid down every 5 feet. Two

(Concluded on next page)



4. This photo shows the ring and pushing frame fully withdrawn. The 78-inch steel ring fits into the bell section of the precast RC pipe.

ed Into Place Through Hardpan

cking

at the
he low
39 feet
b prom-
ned up
below
d clam
holes,
waiting
e shaft.
various
Cater-
is for-
a short
an pull
work

with the
of the
braced
timbers.
e shaft
relini-
mately
contains
forward
muck-
be sec-

n down
ow the
jacking
relini-
in this
e rock
was cut
tic clay
s, and
x 6 x 2-
e track
d back
d and
at the
e.

only 10
Later
20 feet
ground
ed to a
larger
e pipe,
e skids

up a
previ-
r cross
t. Two

ch steel

4 x 6-inch timber rails were then placed along the length of the opened section. These were wedged against the cross ties to tilt at an angle conforming to the curvature of the pipe. The rails were coated with Bentonite to reduce friction during the jacking.

Jacking equipment consisted of two Rodgers 400-ton hydraulic rams and a Rodgers hydraulic pump powered by a 25-hp Wisconsin air-cooled gasoline engine. The main equipment and accessory high-pressure hose, valves, etc., was supplied as a complete unit by Rodgers Hydraulic, Inc., of Minneapolis. The rams were set at the rear section of each shaft and braced against the back wall. The integral pump and engine was up at ground surface. All controls for the jacking operations were easily handled by the one man at the pump. The rams have a 4-foot travel and are reversible so that the jacking frame was easily withdrawn to prepare for the next push.

The contractor had a little trouble at first with the backstop for the rams. The back wall of the shaft was braced with 8 x 8 oak timbers bolted together for load distribution against the soil. A 4 x 4-foot braced steel box section was placed behind each of the rams. The box was made up of 1-inch plate steel and four 12-inch H-beams with the flanges welded to the front and back plates. This showed signs of crushing during the early stages of jacking, so it was further reinforced by welding more H-beam sections in the box. This did the trick.

The force of the hydraulic rams was transferred to the pipe through a special jacking frame made of built-up H-beams applying a distributed load at six bearing areas on a steel-pipe ring. The ring was set into the bell end of the pipe and distributed the load evenly around the full circumference.

Five-foot sections of pipe were added one at a time. Maximum push on this job was 270 feet, requiring a force of 540 tons. Full capacity of the rams 800 tons, was not used, since above 540 tons the pipe might have crumbled.

The contractor reported some difficulty in maintaining alignment and grade on the long pushes. Variation from a true straight line or the 0.1 per cent grade was corrected by cutting the tunnel sidewalls or adjusting the cross ties. Bringing one wall in closer to the center line forced the pipe to change direction and corrected a previous deviation from proper alignment.

"Ground conditions are the deter-

mining factor in the success of this kind of work", said Dan Callahan, General Superintendent. "In hardpan and firm soil the method works well. In bad ground it is tough going." About midway in the work, the Hardin crews ran into a vein of sand. This section had to be shored with 3 x 6 logging down to the spring line. At the time of C&EMonthly's visit to the job, they were running into water-bearing sand loam and were not certain how the work would go if pumping didn't pull the water table down.

Personnel and Shop

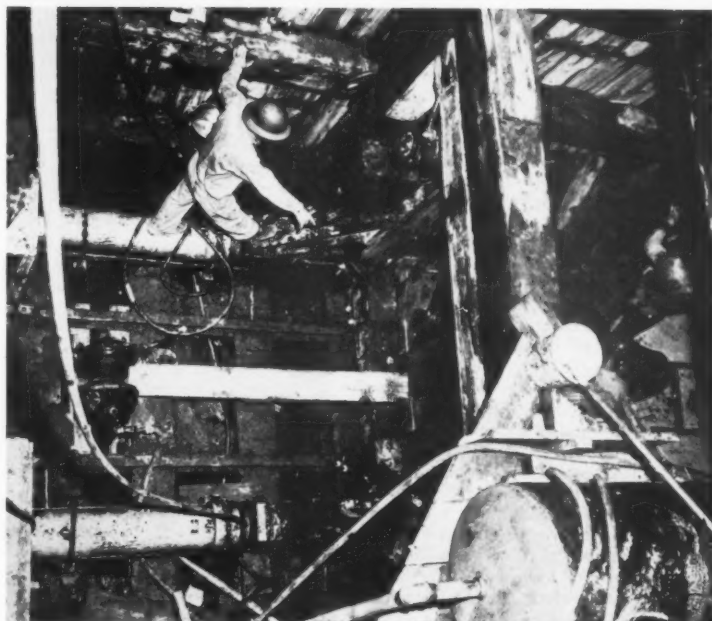
Work shifts varied on the jacking job; at first there were three, then one, and finally two—an 8 to 4:30 and a 4:30 to 1. There were 10 to 12 men on each shift. Work was directed by Dan Callahan, General Superintendent, and Bill Pavin, Tunnel Superintendent. Shift Foremen were Walter Dishman and Tranquillo Marchioro. Resident Engineers for the Cook County Highway Department were Louis Dinnozenzo and Peter Fischman.

Much of the job efficiency can be credited to the new Hardin shop in Forest Park, Ill. The building covers about 6,700 square feet and was built with spare labor as time allowed. It contains just about everything a chief mechanic could want.

The shop has two 30-foot workbenches with vises, grinders, buffers, etc., set at convenient spots along their length. For tough pulling jobs there is a 100-ton Lempeco hydraulic press. A Ryerson Ironworker set on one side of the room is a combined shear, punch, and shaper. It can handle $\frac{1}{2}$ x 4 x 4 angles, punch $\frac{3}{4}$ x $\frac{3}{4}$ -inch steel, or cut a $\frac{1}{2}$ -inch sheet steel. An American 24-inch lathe with a 10-foot bed and a Brown & Sharp milling machine enable the Hardin company to make its own parts. Some accessories for the tunnel jacking were made on these units.

Other equipment includes a Sioux valve grinder, an Oster threading machine ($\frac{1}{4}$ to 2-inch pipe or $\frac{1}{4}$ to $1\frac{1}{2}$ -inch bolts), a Wells 8-inch metal bandsaw, and a 20-inch drill press. Two 300-amp Lincoln welders are usually kept around the shop for repair and hard-facing work. A Gardner-Denver vertical air compressor supplies the power for pneumatic hand tools. Small parts are stored in a Rotabin.

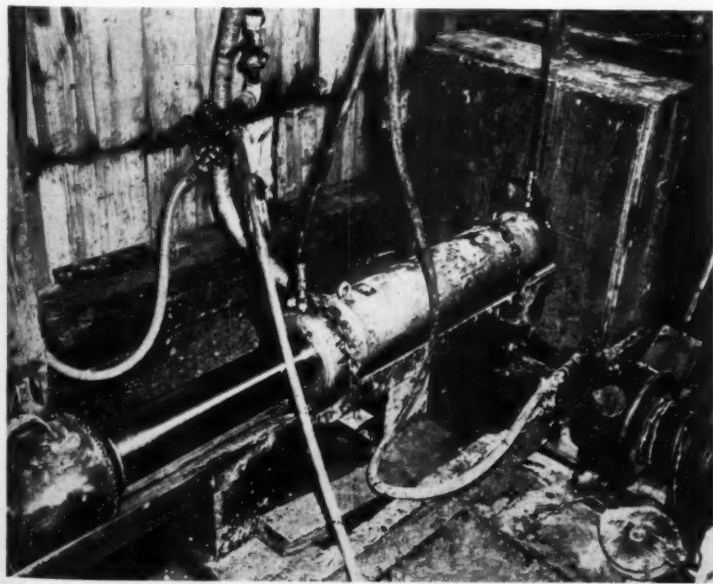
Oscar Bengtson, an old-timer with the Hardin outfit, glowed with pride as he showed off the shop layout, and we don't blame him; it rates A-1.



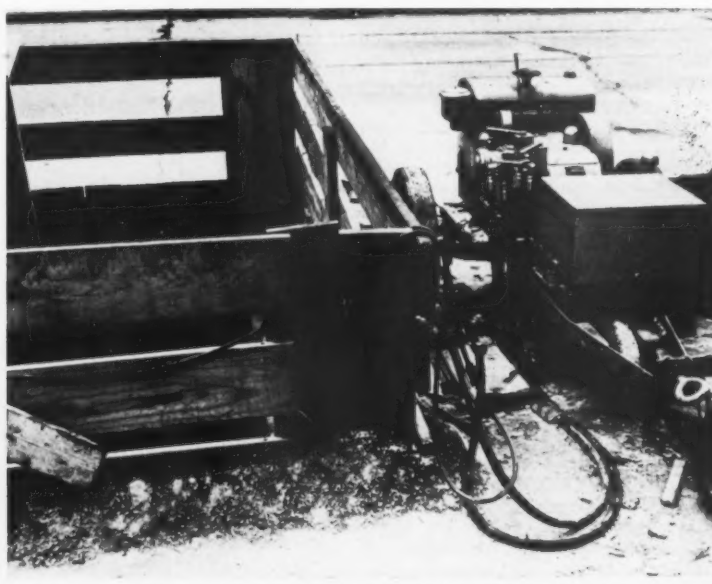
5. As for the jacking equipment—the two rams are Rodgers 400-ton hydraulic units. Their full capacity was not used on this job; maximum was 540 tons.



6. Backing for the rams: 4 x 4-foot x 12-inch-deep braced box sections bearing on a wall of 8 x 8 oak timbers. Yale Chain falls positioned the rams and braces.



7. A closeup of one of the rams and its backing. The box stood loads up to 270 tons. The rams, incidentally, have a full 4-foot travel and are reversible.



8. At the top of the shaft, the other part of the jacking package: a Rodgers hydraulic pump powered by a 25-hp Wisconsin air-cooled gasoline engine.

This Construction Aims at Destruction

Construction men do not generally reckon to put up a street of partly demolished buildings, yet that is just what the Federal Civil Defense Administration Staff College at Olney, Md., has ordered. Nothing less than an entire city street, complete with stores, a theater, two-story dwellings, apartments, and a five-story business structure, is included in the contract, and work is under way at Olney. Joseph B. Bahen Construction Co., Inc., Washington, D. C., is the contractor, and McLeod & Farrara, architectural firm, the designer.

The purpose of the "street of ruins" is to serve as a training ground for an advance rescue-training course organized by the Civil Defense to give realistic first-hand experience in practical wartime rescue operations. In spite of the immense handicap arising from the lack of actual experienced rescue workers under enemy air attack, the Civil Defense is determined to leave as little as possible to chance; with this end in view the designs of the structures were developed from studies made of high-explosive bombings in Great Britain and Germany, as well as the effects of the atomic bombings of Nagasaki and Hiroshima.

What will the Olney street look like? It will simulate ruins with store fronts blown out, floors of houses partly in basements, girders and beams twisted and contorted at odd angles, and with piles of rubble, dirt, and broken concrete cluttering up all access to the buildings. Yet the buildings are being constructed according to rigid engineering principles of stress, weight, and the use of tested materials.

Of special interest in this project are the kinds of buildings going up, each one chosen as a type common in the United States. Structures include:

1. Two-story-and-basement wood-frame house, one of the commonest types of U. S. dwelling, built chiefly in eastern and midwestern industrial areas between 1900 and 1915. This set will provide instruction in earth and debris tunneling to remove victims without further injury and will have an electric service in the basement to "shock" the mishandler of the equipment.

2. Two-story-and-basement row house, generally found in the downtown sections of most older U. S. cities—the two-story apartment or tenement house built in the 1890-1920 period. Many similar houses (though much older) in Britain and Germany disintegrated into small bits, but in the U. S., where brickwork mortar is stronger, experts think these walls would break up into large sections, with the sidewalls "pancaking" into horizontal layers held apart by debris. This set will give opportunity for another type of rescue technique, including dealing with broken water mains, while leaking gas pipes will force the operator to use breathing apparatus.

3. Two-story office, store, and theater building, two stories high in front, with a high-ceilinged garage or workshop in the rear, typical of theaters, movies, meeting halls, and some schools. The big danger here from an atom-bomb explosion is disintegration or movement of the walls, which would cause a collapse of the roof and floors and trapping of the building's occupants. A typical "back-alley" rescue situation will be added by making a driveway in the rear.

4. Three-story-and-basement office and apartment building, typical of the 1920-30 period, when steel-skeleton construction began to replace wood. Many American urban buildings are of this type, as they are in Britain, Germany, and Japan. As exterior walls in this kind of structure are light, large quantities of rubble would fill each

level with debris.

5. Five-story reinforced-concrete building, typical of most large business, institutional, and public buildings today, such as offices, banks, hospitals, and schools. Columns, beams, floor slabs, roofs, and sometimes exterior walls are of reinforced concrete. This will give invaluable training in the extrication of trapped casualties when rubble has fallen through many stories and accumulated. It will necessitate special equipment, such as mobile cranes and booms for lowering the injured, and special safeguards will have to be provided for rescue crews working simultaneously at different floor levels. Similar Japanese buildings designed to resist earthquakes stood up reasonably well to atomic blasts; it is

thought that damage to American buildings from atomic blast would consist mainly of twisted steel columns, dislocation of cross beams, and the falling away of the walls between them. The outside frame would probably remain.

The Olney "rescue street," which is a unique experiment in the United States, is being built along the same lines as one now in use in England. Considerable interest in the training course has already been shown by several large industrial concerns in this country, many of whom are considering sending their men there for training at the company's expense.

Help insure America's security and your own. Buy U. S. Defense Bonds.

Pay Highway Engineers More

Roy Fruehauf, President of Fruehauf Trailer Co., Detroit, Mich., writing in a March issue of *Newsweek* magazine, mentioned the case of a state highway commissioner who told him he couldn't obtain a single young engineer because all he could offer was "lollipop money". In proposing an increase in pay for highway engineers, Mr. Fruehauf pointed out that the public is willing to spend billions of dollars for repairing and building highways, yet overlooks an essential ingredient—the men charged with performing the job.

"America is facing a serious shortage of competent road engineers," said Mr. Fruehauf, "because we are paying some of them as little as \$30 a week."



The Inside Story OF DOUBLE IMPELLER IMPACT BREAKER PRODUCTION



Approximately 50% less contact of stone on metal, because such a high percentage of material is broken in suspension.

Extremely high ratio of reduction at very low power costs.

Maximum output of cubical shaped aggregate required in so many specifications.

Minimum amount of accessory equipment such as secondary crushers, conveyors, hoppers, screens, elevators, etc.

U. S. Pat. Nos. 2373691, 2486421
Canadian Pat. No. 439371

WITH a contract for three quarters of a million tons calling for seven sizes of crushed rock ranging from asphaltic concrete stone to 3-inch base rock, Concrete Materials and Construction Company wanted a primary reduction unit that would give them big volumes of specification aggregate in one operation. That's why they selected a 5050 Cedarapids Double Impeller Impact Breaker!

Originally scheduled to produce 400 tons per hour, the big breaker consistently averaged more than 600 tons an hour of primary crushing and reached a peak average over a 20-hour period of 724 tons. The feed was quarry rock that would pass a 50-inch square opening. The output was a cubical, 3-inch minus that met the toughest specifications. No wonder more and more producers of cubical aggregate are depending on the low cost, big volume production of Cedarapids Double Impellers!

Whatever your requirements for crushing and screening or bituminous mixing equipment, be sure to talk to your nearest Cedarapids distributor. You'll be way ahead if you do.

THE IOWA LINE of Material Handling Equipment Includes:

ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS • HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

Mississippi River Parkway Is a Practical Possibility

A 2,000-mile route along the Mississippi River from its source near the Canadian border to the passes more than 100 miles below New Orleans is economically feasible, according to J. Lester White, Director of the Louisiana Department of Public Works. Mr. White, speaking before the Spring Convention of the American Society of Civil Engineers last March, told members about plans envisioned for this "spinal cord" parkway which would run through scenery ranging from the subarctic to the subtropical.

A highway such as this could be prohibitively costly, said Mr. White, but the crux of the whole plan is to

use considerable stretches of existing highway. Initially at least, approximately 60 per cent of the Mississippi River Parkway would consist of existing primary and secondary roads, which would be improved by reasonable application of such parkway features as limited access.

Mr. White, reporting on a survey sponsored by Congress in 1949, emphasized that success of the scheme would depend on the ten states affected as well as on the Federal government. He drew attention to the enthusiastic cooperation already received from the Mississippi River Commission, Corps of Engineers, Fish and Wildlife Service, Forest Service, state departments of highways, historical societies, garden clubs, newspapers, chambers of com-

merce, and many other agencies.

The outstanding advantages of such a parkway, said Mr. White, would be these: it would have scenic appeal for tourists and would hasten traffic; during an emergency it would serve the military as a high-standard direct road stretching through the industrial heart of the nation; and its cost would be reasonable since it would use existing sections. In the river states' construction, ownership, and operation, only such Federal cooperation and direction would intervene as would be necessary to assure continuity of route and uniformity of design. Financing would be within the structure of the Federal-Aid Highway Act, with additional Federal participation to transform the highway thus built into a parkway.

Convention Calendar

June 5-7—WASHO Convention

Annual Convention, Western Association of State Highway Officials, Olympic Hotel, Seattle, Wash. W. C. Pedersen, General Chairman, Department of Highways, Olympia, Wash.

June 11-13—Surveying, Mapping Congress

Twelfth Annual Meeting, American Congress on Surveying and Mapping, The Shoreham Hotel, Washington, D. C. Chester E. Kowalczyk, General Chairman, 1504 Noyes Drive, Silver Springs, Md.

June 15-18—County Officials Meeting

Annual Conference, National Association of County Officials, Plaza Hotel, San Antonio, Texas. Keith L. Seegmiller, Secretary-Treasurer, 1616 Eye St., N. W., Washington 6, D. C.

June 16-20—ASCE Convention

Summer Meeting, American Society of Civil Engineers, Cosmopolitan Hotel, Denver, Colo. Don P. Reynolds, Assistant to the Secretary, American Society of Civil Engineers, 33 W. 39th St., New York 18, N. Y.

June 18-20—Soil-Stabilization Conference

Conference on Soil Stabilization, Massachusetts Institute of Technology, Cambridge 39, Mass. Prof. Harl P. Aldrich, Jr., Conference Secretary, Room 1-336, M.I.T., Cambridge 39, Mass.

June 23-27—ASTM Meeting

Annual Meeting, American Society for Testing Materials, Hotels Statler and New Yorker, New York, N. Y. Executive Secretary, 1916 Race St., Philadelphia 3, Pa.

ASTM on Cement Spex

At a recent meeting of Committee C-1 of the American Society for Testing Materials, members gave considerable attention to specifications on portland cement, masonry, and blended cements. In the course of discussion the following points emerged:

Portland cement: The Committee decided to recommend a revision in the Specifications for Portland Cement (C 150) which would give full recognition to the division between normal portland and air-entraining portland cements in the matter of air content. This dividing point is established at 15 per cent by volume.

Masonry mortars: In the matter of setting a strict limit on expansion of masonry mortars, an intensive study has been authorized to determine the effectiveness of an autoclave expansion in masonry-cement spex. Members proposed a revision in this test method (C 151), which would allow the use of shorter specimens with effective gage length of 5 inches, except in case of dispute, when the longer bar shall govern.

Blended cements: Proposed specifications for fly-ash portland cement and portland pozzolan cement came under further review.

The Chairman of Committee C-1 is R. R. Litehiser, of the Ohio State Highway Testing and Research Laboratory, and the Secretary is W. S. Weaver, Canada Cement Co., Ltd., Montreal. The Committee at its fall meeting will celebrate its 50th anniversary.

Lull's Two District Mgrs.

R. M. Cowden and Jack Hiltbrand have been appointed District Managers in Sales for the Lull Mfg. Co., Minneapolis, Minn., manufacturer of the Shovel loader, Travel loader, and other construction and materials-handling equipment. Mr. Cowden's territory is New Mexico, Texas, Oklahoma, Arkansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, and Florida; he makes his headquarters in Houston, Texas. Mr. Hiltbrand is responsible for the states of Michigan, Indiana, Ohio, Kentucky, West Virginia, North Carolina, and South Carolina.

When we bought a Cedarapids Subimpeller Impact Breaker"

Says Concrete Materials and Construction Co.

Cedar Rapids, Iowa



Cedarapids

Built by
IOWA

Headquarters for

COST REDUCING EQUIPMENT

IOWA MANUFACTURING CO.

Cedar Rapids, Iowa, U.S.A.



The 4-inch Con-Sol well drill has a 125-pound drill which is dropped by a cam about 36 times a minute. It has a 6-inch sister drill, too.

Two Well Drillers

Two power-driven units for drilling wells or making geological surveys are available from Consolidated Industries, Inc., West Cheshire, Conn. The smaller Con-Sol has a 125-pound drill which is dropped by a cam about 36 times a minute. A 4-inch casing is used down to bedrock, and the unit will drill to 300 feet.

The larger model uses a 4 or 6-inch casing and the drills weigh 300 and 450 pounds. On both models the frame is wrought iron and the bearings are bronze. The units are powered by gasoline or electric motors.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 873.

Mobile-Radio Brochure

A brochure outlining the uses of two-way mobile radio equipment for materials handling, plant maintenance, and other applications has been issued

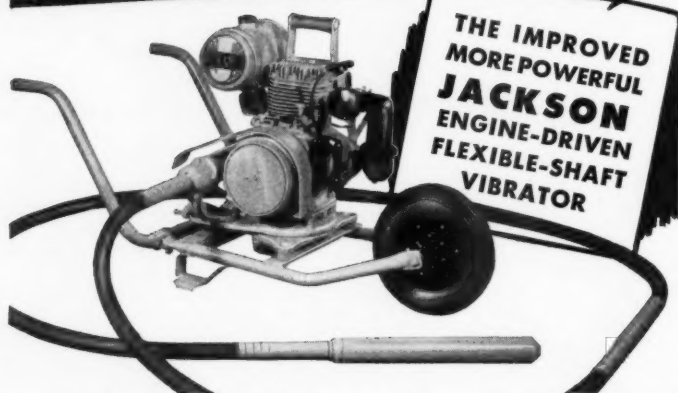
by the RCA Engineering Products Department. It describes how two-way radio is used to dispatch personnel and expedite the movement of materials. The company points out that this quick method of communication eliminates needless travel to and from the dispatch office.

This literature may be obtained from

the Mobile Communications Section, Radio Corp. of America, Front and Cooper Sts., Camden 2, N. J., by requesting Form MC-1752, or by using the Request Card at page 16. Circle No. 934.

Put your scrap metal to work for increased steel production.

TWO GREAT VIBRATORS FOR GENERAL CONCRETE CONSTRUCTION!



Model FS-6A. Now furnished with a 6 H.P. engine, providing plenty of reserve power under all conditions, and vastly improved power take-off. Vibrator frequency (up to 7500 VPM) and amplitude are carefully balanced for maximum progress and thorough consolidation. It is available with 3 vibrator heads, for thick or thin sections. Shafting is furnished in 7' and 14' lengths up to 28'. Quickly adaptable to concrete rubbing, wet or dry, and drilling. Built to stand severe usage. By any comparison, it's the finest engine-driven vibrator on the market and the best buy! Complete details on request.

The POWERFUL, LIGHTWEIGHT JACKSON ELECTRIC VIBRATOR



FS-150A

2 1/4 H.P. MOTOR. FAST — RELIABLE

Has more than ample power for uninterrupted placing of the stiffest mixes, even when using the maximum length of shaft (28'). Provides 8,000 to 10,000 VPM. Built for trouble-free service.

PLUGS INTO LAMP SOCKET

Wherever 115 volt, 60 cycle, single-phase AC or DC is available.

EXTREMELY HANDY

May be had with any length of shaft up to 28' and choice of 3 vibrator heads. And since it weighs but 50 lbs. it is ideal for thin or thick sections, high places and reaching those otherwise difficult-to-get-to spots. Also ideal for incasing structural members and similar applications.

QUICKLY ADAPTABLE TO CONCRETE RUBBING

Wet or dry, and drilling. A relatively inexpensive vibrator that will do a whole of a job.

VIBRATORS FOR ALL PURPOSES — FOR SALE OR RENT

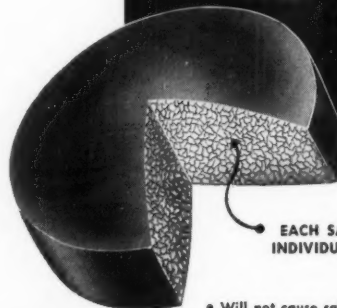
at your Jackson Distributor. Mass concrete placement, highway, airport, and municipal paving. Asphalt and Soil Compaction. Power Plants.



ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Mich.

New PEP-UP IMPREGNATED SALT TABLETS

RELEASE SALT
IMMEDIATELY
(Not Enteric
Coated)



EACH SALT CRYSTAL
INDIVIDUALLY COATED

DISPENSER

PEP-UP Impregnated Salt Tablets come to you in sanitary, factory sealed dispensers at no extra cost.

- Will not cause salt sickness or nausea
- No delay in getting salt into system
- Starts dissolving immediately
- Dissolves completely in about 100 minutes
- Withstands rough handling and storage without deterioration
- Meets Government Specification No. SS-S-31D
- Order Now—Be Prepared
- Write for literature and prices

UNITED STATES SAFETY SERVICE CO.

KANSAS CITY 8, MISSOURI BRANCHES IN PRINCIPAL INDUSTRIAL CITIES
In Canada: PARMELEE, LTD. Toronto

A FEW HOURS CONVINCED HIM...



Less than half a day's experience with his first APSCO Base Paver satisfied an eastern contractor that this machine was all that was claimed for it... and more. So he immediately ordered another!

It's that type of experience that has made the APSCO Base Paver a favorite with so many road builders. Laying up to 160 tons per hour under normal conditions, its oscillating leveling screed, depth, banking and crown controls produce accurate, economical results.



The full APSCO line includes Road Wideners (shoulder building, trench filling with aggregate, hot mix or even concrete); Base Pavers; Bituminous Paver Finishers; Trench Rollers and Tandem Rollers. Send for details!

ALL PURPOSE SPREADER CO. Elyria, Ohio U.S.A.

Avoid Legal Pitfalls

Edited by A. L. H. STREET, Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Material Bond Did Not Cover Equipment Parts

THE PROBLEM: Four 60-foot steel beams formed part of a derrick which a subcontractor used to assemble other beams in the superstructure of a highway bridge. A bond bound the prime contractor to "pay when and as due all lawful claims for labor performed or materials and supplies furnished for use in and about the construction of said highway or highway structures". Did the company which furnished the four beams to the subcontractor have a right to hold the prime contractor and his surety liable for the beams under this bond?

THE ANSWER: No. (Kline v. McMeekin Construction Co., 67 S. E. 2d 304, decided by the South Carolina Supreme Court.)

The four beams were used as outriggers for a 100-foot mast and a 90-foot boom. The Supreme Court upheld a lower court's ruling that the beams were part of the subcontractor's permanent equipment' usable on other jobs.

Citing several of its previous decisions, the Supreme Court said that as a general rule "such incidentals as coal, gasoline, and current repairs to machinery, etc." should be included within the purview of a bond, since these items are necessary to the prosecution of work. But permanent additions to a contractor's equipment, which by their nature are neither depreciated nor consumed on a contract, are not within the purview of a bond.

The court quoted at length from a decision of the Minnesota Supreme Court in the case of Clifton v. Norden, 226 N. W. 940, 67 A. L. R. 1227. The gist of the opinion in that case, written by an exceptionally able judge, is to this effect: A bond of the kind here under discussion does not include a motor truck, although it be bought for use on a specific job, if in normal course it will serve on other jobs as well. The same is true if an old truck breaks down beyond repair on a job, necessitating purchase of another which can be used on other jobs after completion of the current one. But, as to repair work, the fact that repairs may permit later use of equipment does not necessarily prevent claim against the bond for the cost of the repairs.

Several decisions in this matter rendered by the Federal courts under Government contracts are noteworthy. Under 40 U. S. Code, sec. 270a, a contractor for public work shall give bond to protect "all persons supplying labor and materials in the prosecution of the work". The decisions are generally in line with the conclusions reached by state courts in cases such as we have just summarized. Here is the substance of some of them:

A bond did not cover lumber used as decking in structural-steel construction where it was hauled away for use on other jobs. Heavy timbers used as a base for a derrick were not covered, for want of proof that they were totally consumed on the particular job. (United States v. James Baird Co., 73 Fed. 2d 652, decided by the United States Court of Appeals, District of Columbia.)

A leading decision shows that particular work may be so destructive of equipment as to bring replacement cost within a bond. The United States Circuit Court of Appeals, Fifth Circuit, decided that the bond of a contractor on a Government levee job covered

replacement of practically all parts of trucks worn out on the bonded job. The surety unsuccessfully argued that whether the parts were repairs, covered by the bond, or replacements, not so covered, was to be determined on a basis of normal use of trucks. The court reasoned: Usually a truck will last for years and the cost of replacing motors, axles, and tires should not be treated as repairs chargeable to the bonded job. Damage done in a collision would probably be so treated. But shovels, drill points, etc., though equipment in a sense, are more like materials consumed but not built into the work — since they wear out quickly

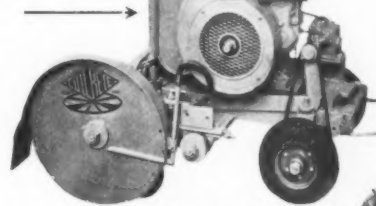
(Continued on next page)

CUTCRETE MODEL STT

Concrete Saw

Single Trail Blade accommodates 8" to 20" blade
Will saw to 8" depth

Change over in 15 minutes to single trail blade and tandem trail blade

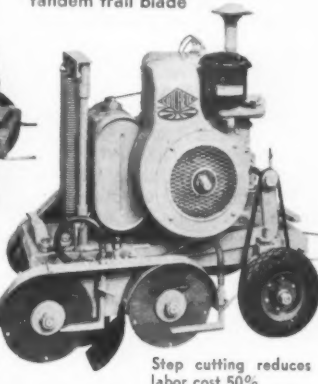


Write for full details to:

CUTCRETE CORP.

Pasadena 8, California

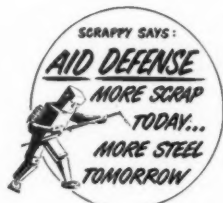
Tandem Trail Blade step cutting gives twice the speed of any other designed saw



Step cutting reduces labor cost 50%



Grandpa Never Threw a Thing Away



It's only human to want to hold on to things after they've outlived their usefulness. That's why today millions of tons of worn-out and obsolete equipment and machinery are lying forgotten in the country's plants and factories and on farms.

The steel industry needs these millions of tons of dormant scrap, needs

it in the worst way. With this vital dormant scrap the entire steel supply picture would brighten up, with more steel for everybody. But without it, the steel industry cannot hope to keep up production at present levels.

Call in a scrap dealer now, today. He will buy your dormant scrap and start it moving toward the steel mills.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

More Scrap Today... More Steel Tomorrow

Avoid Legal Pitfalls

(Continued from preceding page)

and break often.

In levee work, equipment that would be permanent in ordinary use is often consumed, or so far worn out or broken as to make it more economical to replace an entire motor or other assembly than to attempt repairs. The surety is presumed to know this, and the expenses operate to its benefit indirectly by saving time and expense in the general performance of the job. So, in such cases, the bond should be deemed to cover replacement costs. The court noted that on completion of this particular job, the contractor had "no more trucks and they were in worse shape when the work stopped than when it started". *Massachusetts Bonding & Insurance Co. v. United States*, 88 Fed. 2d 388.)

Where truck tires and tubes were practically worn out on a Government dam project, a Federal judge held that a bond covered their cost, likening them to the reshoeing of mules and horses used on construction jobs. But the judge recognized that a bond would not cover tires and tubes remaining practically new on completion of the job. The date of purchase and first use on the job, the character of terrain and roads on which they were used, loads carried, etc., are proper factors, he said, in determining whether the rubber was exhausted on the job. (*United States v. Ambursen Dam Co.*, 3 Fed. Supp. 548, decided by United States District Court, Northern District of California.)

Additional cases in point will be found in the opinion of the United States Circuit Court of Appeals, Tenth Circuit, in an Oklahoma case (*Continental Casualty Co. v. Clarence L. Boyd Co.*, 140 Fed. 2d 115). In that case, involving airport construction, the court disallowed the cost of a pipe wrench and of replacing a blade, disks, and grader belt on dirt-moving equipment because they were not worn out and were usable on other jobs.

Rights of Bank Under Job-Funds Assignment

THE PROBLEMS: A subcontractor assigned to a bank the amount that was to become due him from the prime contractor, subject to changes in the subcontract. Later, to secure completion of the job, the prime contractor had to advance money to the sub. The advances exceeded the balance due the sub.

(1) Was the prime contractor therefore liable to the bank?

The bank lent the sub money to perform job No. 1, but he used part of it on job No. 2. Both jobs were under subcontracts with the same prime contractor. Had the money not been so used, the prime contractor would have had to pay the sub's labor and material bills and retain from him progress payments made by the owner. (2) Was the prime contractor liable to the bank on the theory that he was unjustly enriched at the expense of the bank through the sub's misuse of the loan funds? (3) If the prime contractor paid more money to the bank than was due the sub, the overpayment being made without checking the sub's accounts, was he entitled to compel the bank to refund the excess?

THE ANSWERS: No. (*St. Mary's Bank v. Cianchette*, 99 Fed. Supp. 994, decided by the United States District Court, District of Maine.)

On the third point, the court recognized that under ordinary circumstances

the money paid by mistake is recoverable, but here an exception to the rule applied. Because the sub was financially irresponsible, loss must fall upon either the bank or the prime contractor. It should fall upon the latter because he could have avoided it had he checked accounts before making the excessive payment.

Eight-Hour Law Covered Employee on Foreign Job

THE PROBLEM: A contractor constructed a defense base for the Government in British Guiana, on land leased from Great Britain. An employee was engaged as timekeeper and labor foreman on the job. Was he entitled to overtime pay under the Federal Fair Labor Standards Act or the Federal Eight-Hour Law?

THE ANSWER: Yes—under the latter but not under the former. (*Finnan v. Elmhurst Contracting Co.*, 107 N. Y. Supp. 2d 497, decided by the New York Supreme Court, New York

County, Part X.)

The court said that the fact that some of the materials used on the job were secured outside of British Guiana

did not peg the employee as being "engaged in commerce" within the meaning of the Fair Labor Standards Act. (Concluded on next page)

White Oil-Jacketed Kettles for Heating Elastic Joint Filler

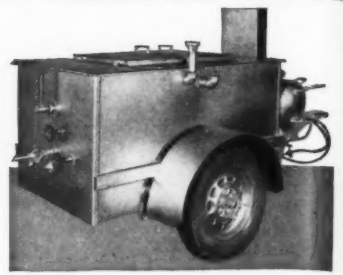
Joint-filling compounds containing rubber for elasticity, must have indirect heat application. They melt at 375° and must not exceed 425°. White Model F-10 kettles maintain this temperature accurately by oil jacket which transfers heat to the compound. White kerosene burners are safe, dependable, easily controlled. Hand operated agitator. Insulated housing. Other kettles for paving maintenance have FIRE-PROOF tops. Hand or engine sprayers. Several sizes.

Write for Circular

White Mfg. Co.

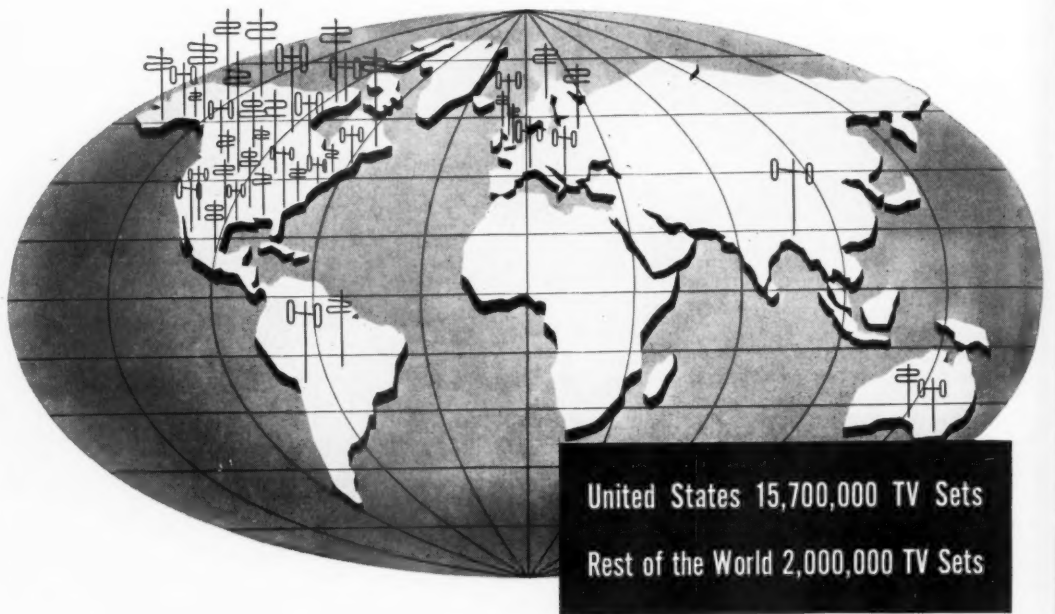
Elkhart

Indiana



Other Products

**ASPHALT PLANTS
CONCRETE VIBRATORS
TRACTOR LOADERS
KEROSENE TORCHES**



COMPETITION Turns Luxuries into Necessities

To millions of people throughout the world, washing machines, radios and television sets are miraculous inventions remote from their lives . . . for the wealthy only.

In the United States, however, a new product appears in no time in the homes of wage earners as well as salaried executives.

Consider television, for example. Only 6,500 sets produced in 1946 . . . over 5,000,000 in 1951. Or washing machines . . . more than 24,000,000 in 10 years.

What has Competition to do with this?

Do you think we'd continue to get more and better products if only one company made each item or each line?

No! We get more and better products here in America, because anybody who thinks he can make anything better or sell it more efficiently is free to try.

And many succeed. Take electrical products like radios and television sets . . . and home appliances like washing machines and electric fans. Does the biggest company monopolize this industry? Not by a long shot! Even counting all its affiliated companies, it still sells less than 1/5 of such products bought in this country.

There are nearly a thousand other companies that make home appliances, radios and television sets. And they do more than 4/5's of the business! The

smallest of them make the biggest companies hustle their bones to keep making products better and better.

In America, a better product can always win consumer acceptance in any field.

Let's keep the COMPETITIVE SYSTEM working for us

The Competitive System can be killed! When industries are run by government, when taxes are so high that they destroy the incentive to work hard and risk savings in business ventures, the Competitive System languishes and dies.

You've seen it happen in other lands. Let's not let it happen here.

Let's all of us watch closely to see that those who represent us in government are working with us and for us to preserve our Competitive System; to assure a tax structure that leaves enough incentive to make hard work worthwhile, so that any man with ability and energy has a chance to earn good money and keep most of it.

Competition thrives best where the rewards are high. People live best where competition thrives.

This report on PROGRESS-FOR-PEOPLE is published by this magazine in cooperation with National Business Publications, Inc., as a public service. This material, including illustration, may be used, with or without credit, in plant city advertisements, employee publications, house organs, speeches or in any other manner.

Avoid Legal Pitfalls

(Continued from preceding page)

Act. But the Eight-Hour Law applied because, under it, existence of commerce was unnecessary.

Application of the law was not defeated by a War Department ruling that the law did not apply to such contracts as this one. In short, the employee had rights under the statute that could not be taken away by departmental rulings.

Engineer Cannot Claim Pay When He Underestimates Cost

THE PROBLEMS: Plaintiff was employed by defendant town to engineer and supervise water-works improvements, contingent upon his completing plans and specifications that would enable the town to construct a satisfactory system within the funds available. Plaintiff estimated that the total cost would be \$300,000 under his plans and specifications. Funds available totaled \$150,000, and \$175,000 worth of bonds was voted with a view to selling them below par.

However, the lowest bids received indicated a construction cost of \$424,095.69, with additional costs, including engineering fees, that would bring the grand total to about \$500,000. Despite negotiations with bidders, it was impossible so to revise the plans and specifications as to bring the project within the estimated cost. The contract with plaintiff was canceled and he sued for damages. (1) Was the town liable on a theory that it was obligated to raise more funds than had been contemplated? (2) If the contract was rightfully canceled, was the town liable for the reasonable value of the benefits derived from plaintiff's services?

THE ANSWERS: (1) No. (2) Yes. (Batcheller v. Town of Westport, 235 Pac. 2d 471, decided by the Washington Supreme Court.)

1. The court said that since plaintiff's estimate indicated that a \$175,000 bond issue would suffice, and the town, including its voters, approved it on that theory, plaintiff was precluded from asserting that the town was bound to

increase that limit. This was so even though there was no legal bar to amending the proceedings by increasing the bond issue if the electors so voted.

The decision rests on the ground that Washington statutes require a municipal contract to be based on an ordinance showing a plan, an estimate of cost, and method of payment. "When that ordinance is passed on the advice of the architect or engineer, specifying the amount of funds to be made available for payment of the project, it becomes part of the contract of employment and fixes the limits within which the architect or engineer must perform. No obligation rests on the municipal corporation to change the plan or system ordinance to comply with shortcomings in his performance."

2. The town, having built a water system under another engineer's plans, was declared by the court to be liable to plaintiff for benefits derived through his services, which included the obtaining of a favorable contract for the purchase of pipe, and aid in securing state funds for the project. The sum of \$12,750 was declared to be the reasonable value of those services.

Ample Warning to Motorists

THE PROBLEM: Defendant contractor was excavating a ditch along one side of a town street where telephone cables were to be laid. There were sawhorse barriers, bearing the sign "Men Working", at and near each end of the ditch. The other side of the street was open to traffic, and plaintiff, while driving a truck in daylight, attempted to pass between a parked vehicle and an open section of the ditch. The truck wheels skidded on wet clay along the edge of the ditch and into it. Was the contractor liable for plaintiff's injuries?

THE ANSWER: No. (Presley v. C. M. Allen & Co., 66 S. E. 2d 789, decided by the North Carolina Supreme Court.)

The court said that the contractor had fully discharged his duty to warn travelers against the open ditch. It was not necessary to erect barriers that would actually prevent vehicles from being driven into the ditch. The suit was dismissed, but mainly on the ground that plaintiff was fully aware of the danger presented, and that the accident was directly caused by his own negligence in trying to drive through a too narrow space between the ditch

and the parked vehicle.

The court found it unnecessary to decide whether the contractor was negligent in permitting wet clay to be scattered upon the traveled part of the paved street. It held that his negligence, if any, could not have been the direct cause of the accident, since plaintiff was fully aware of the presence of the clay and any danger caused by it.

Power to Build Bridge Includes Approaches Too

THE PROBLEM: A city had statutory power to build a toll bridge. Did this include power to provide reasonably necessary accessways such as viaducts, traffic arteries, etc.?

THE ANSWER: Yes. (State v. Hanway, 67 S. E. 2d 1, decided by the West Virginia Supreme Court of Appeals.)

The court said the fact that some of the structures were about ½ mile from the bridge proper did not make them any less part of the "approaches".

Brute Force PUTS 'EM DOWN



SUPER-VULCAN OPEN TYPE DIFFERENTIAL-ACTING PILE HAMMERS

18C, 30C, 50C and 80C

You can depend on powerful Super-Vulcan every time for fast, efficient pile driving. Line it up on any type of pile under the toughest conditions and you'll see why Super-Vulcan costs less to operate, drives more piles per dollar. It's rugged, durable, simple in design, easy to operate . . . built to meet the requirements of experienced contractors.

The open type fits the same leads, uses the same accessories, as Warrington-Vulcan Single-Acting Pile Hammers.

For double driving power on less steam choose Super-Vulcan. Write for details.



Size—18C-30C-50C-80C Meet all needs

VULCAN IRONWORKS

Since 1852

329 North Bell Avenue

Chicago 12



---Illinois

STRUCTO

LINE OF CONTRACTORS TOOLS

DEMOLITION TOOLS

PAVEMENT BREAKERS



All STRUCTO tools are made in the modern Arrow shops by skilled tool makers using only the finest quality steel.

In addition to the tools shown above the STRUCTO line includes air hammer tools, star drills, drift pins and pull pins. All are available in a wide variety of sizes and weights.

Every STRUCTO tool is backed by 37 years experience in making fine tools, plus a generous amount of good service to customers.

Write for Bulletin No. 851 showing the complete line.

ARROW TOOLS INC.

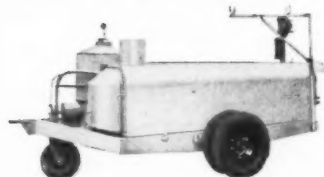
1900 So. Kostner Ave., Chicago 23, Ill.

HOT ASPHALT WHEN YOU NEED IT

With The

RAPID FIRE

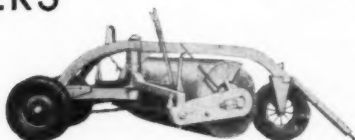
Circulating heater for tank cars or storage. Positive circulation reduces coking and increases flue life



Model 43—Large Capacity for high production jobs. The small model 50 for jobs heating 10,000 gallons or less per day at 350°.

GRACE ROAD SWEEPERS

ENGINE DRIVEN
TRACTION DRIVEN
OR TRACTOR ATTACHED



ALL SWEEP Either LEFT OR RIGHT

W. E. GRACE MFG. COMPANY

6003 S. Lamar Street

Dallas, Texas

ROAD BUILDERS — IT'S SENSATIONAL! DRAGS PECKERWOOD DRAGS

STEEL SPRING WIRE ROAD BROOMS MADE IN ANY C-O-N-T-I-N-U-O-U-S LENGTH UP TO 12 FEET

WIDTH 6 INCHES—IT'S DIFFERENT ASSEMBLE YOUR OWN—IN ANY SHAPE REQUIRED—IN MINUTES, NOT HOURS

NO FRAME REQUIRED

MADE WITH KILN DRIED 6" WIDE HARDWOOD AND HEAVY SPRING STEEL WIRES TRIPLE OUT EACH HOLE. NOT STAPLE SET

THIS IS IT!



ORDER NOW

ILLUSTRATION OF 10-FOOT LENGTH ONLY \$3.50

RUNNING FOOT F.O.B. K.C., MO. NOTICE! Our 15" length Unit Drag 3" wide with the two bolts that fits your frame, still \$2.50 ea.

SINCE VAN BRUSH MFG. CO. 1928

327 SO. WEST BLVD., KANSAS CITY 8, MO.

Hydro Power Plant Built on Silty Clay

There is no underlying rock formation at the site of the C. J. Strike hydroelectric project, located on Snake River near Mountain Home, Idaho, where the Idaho Power Co. plans to complete the biggest kilowatt producer in its system by the middle of this year. The structures are built on a silty clay formation several hundred feet thick and highly impermeable. Morrison-Knudsen Co., Boise, Idaho, got under way on the project in December, 1950. The plant will cost an estimated \$19,400,000 and related transmission facilities will run around \$2,200,000.

In the north abutment, where 27 feet of stratified permeable silt, sand, gravel, cobbles, and boulders overlies the silty clay, the engineers came up against the problem of seepage. Their solution was a clay cutoff wall 10 feet thick x 1,400 feet long, extending from the spillway upstream. They then built a 5-foot-thick compacted-clay blanket to seal



A Manilow crane powered by a Caterpillar diesel D397 engine works on the C. J. Strike hydroelectric project on Snake River, near Mountain Home, Idaho.

off the "bottom gravel" stratum between the cutoff wall and the current river level.

The earth-fill dam is 3,220 feet long x 115 feet high, measured from the foundation at its lowest point; it is 675 feet wide at the base and 30 feet at the top. It contains nearly 2,000,000 cubic yards of material and the lake created will flood about 7,500 acres. The backwater will extend about 32 miles up the Snake and 12 miles up the Bruneau.

At the north end of the dam is a concrete spillway containing 230,000 cubic yards of concrete and topped with eight radial gates 34 feet long x 22 feet high. This spillway will discharge a flood of 100,000 cubic feet per second at normal pond elevation and under emergency conditions will handle 140,000 cubic feet per second by increasing the pond level 5 feet. The stilling basin at the toe of the spillway will prevent erosion of the riprap placed over the clay riverbed. The spillway and stilling basin together cover nearly 4½ acres. The whole design was model-tested at the Worcester Polytechnic Institute.

Prior to any river diversion, the spillway was built to an elevation higher than flood level with ten 10 x 15-foot diversion tunnels through the base. Then the river was diverted through the tunnels and work on the earth-fill dam began. When the time comes to fill the pond, the tunnels will be blocked off and filled with concrete.

The impervious core in the dam was compacted in 6 to 9-inch layers, and the material used was frequently sampled and analyzed by an independent soil expert who maintained a complete soil laboratory at the site. The core is about 80 feet thick at the base and 20 feet thick at the top, and contains about 800,000 cubic yards of material. The shell material (1,200,000 cubic yards) was placed concurrently with the core and was compacted in 12 to 16-inch layers with stone size limited to 8 inches. Sheepfoot rollers compacted the core and large Caterpillar track-type tractors compacted the shell.

Chemical-Resistant Mortars

The need for chemical-resistant cementing and sealing material for joints in masonry and pipe has led to the use of sulfur for many years. At its March meeting Committee C-3 of the American Society for Testing Materials proposed a specification to cover sulfur mortars to be used in chemical-resistant construction and particularly for joining chemical-resistant masonry.

A test method to augment the Tentative Method of Test for Chemical Resistance of Hydraulic-Cement Mortars (C 267) was circulated to members; these two methods together now cover the entire field of chemical-resistant mortars. Under consideration were tests for determining the properties of

silicate mortars of the air-drying type, and for determining bond strength of

chemical-resistant mortars; also, ways to measure working and setting time. Chairman of Committee C-3 is F. O. Anderegg, Consulting Engineer, Somerville, N. J.; and the Secretary is Beaumont Thomas, Stebbins Engineering & Mfg. Co., Watertown, N. Y. The Committee will hold its next meeting during the 50th Anniversary Meeting of the Society in New York City, June 23-27.

Line of Compressors

A bulletin on Smith stationary and portable compressors is announced by Gordon Smith & Co., Inc., 425 College St., Bowling Green, Ky. Three portable models are made, with capacities of 60, 70, and 105 cfm. Several gasoline, diesel, and electric-powered stationary models are also available. The bulletin gives complete specifications on each unit.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 961.

ROSCO MINNEAPOLIS

ROAD and STREET CONSTRUCTION
and
MAINTENANCE EQUIPMENT



BITUMINOUS DISTRIBUTOR... Streakless application with pressure constantly and automatically maintained.



STREET FLUSHERS... Truck mounted or 2-wheel trailer type. Standard or custom built.



MAINTENANCE UNIT... For repair and secondary construction. Truck or trailer mounted.



STREET CLEANER... Settles dust as it cleans. Sweeps and washes the street.

OTHER ROSCO PRODUCTS: Road brooms—traction or powered... tar kettles... power pumping units.

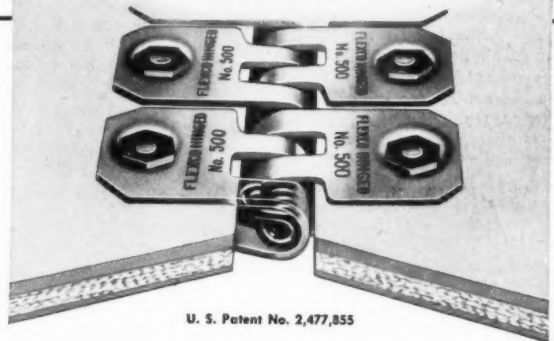
ROSCO MANUFACTURING CO.
3118 SHELLING AVE. • MINNEAPOLIS 6, MINN.

Ask Your ROSCO DEALER
to write the factory for literature.



ROSCO TAR KETTLE
For heating and melting asphalt, pitch and all types of bituminous materials. Welded all-steel construction.

... the new separable FLEXCO HINGED BELT FASTENERS



U. S. Patent No. 2,477,855

For joining grader, trencher, ditcher and other earth moving conveyor belts. For belts ¾" to 1½" thick.

A FLEXCO fastener that is HINGED. Has removable hinge pin. Troughs naturally, operates through take-up pulleys.

Strong, durable... pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin MF 500.

FLEXIBLE STEEL LACING CO. 4608 Lexington St., Chicago 44, Ill.

Servicised PREMOLDED JOINT FILLERS

A COMPLETE LINE
FROM ONE SOURCE
TO MEET ANY REQUIREMENTS



KORK-PAK

Exclusive with Servicised. Lowest cost non-extruding joint filler. 80% recovery after compression. Low moisture absorption. Readily handled without breakage.



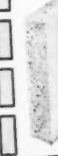
SELF-EXPANDING CORK

For positive joint filling. Specially treated to expand 50% beyond original thickness after compression to keep joint filled under contraction which opens space to more than original size.



ASPHALT

Forms an easily compressible cushion. Highly waterproof, low in cost. Made in 5 thicknesses in any length or width. Formed between two sheets of asphalt saturated felt paper which increases strength and rigidity, improves handling.



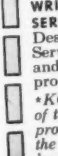
SPONGE RUBBER CEMENTONE

Blends with color of concrete. For use in architectural concrete structures such as bridges, viaducts, etc., where black color of ordinary fillers would be objectionable. Fully resilient—non-extruding.



CORK

High recovery factor (95%) after compression, non-extruding qualities and light color make Cork Joint Filler ideal for use in flood walls, outlet works and spillways, sewage treatment plants, filtration plants and bridge construction.



WRITE FOR THE COMPLETE SERVICISED CATALOG.

Describes the full line of Servicised Asphalt, Cork, and Rubber Composition products.

*KORK-PAK is one of the many Patented products developed for the Construction Industry by Servicised Products Corp.



SERVICISED PRODUCTS CORP.
6051 W. 65TH STREET • CHICAGO 38, ILLINOIS

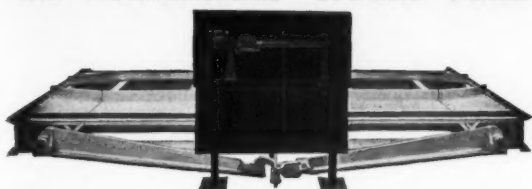
also, ways
ting time
-3 is F. O.
er, Som-
cretary in
Engineer-
n, N. Y.
ext meet-
ary Meet-
York City,

ORS

onary and
nounced by
5 College
e portable
ties of 60,
ne, diesel
ry models
etin gives
ch unit,
ained from
e Request
Circle No.

WINSLOW—PORTABLE TRUCK SCALE

"THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site.
Capacities: 15-18-20-30 Ton—Write us for your nearest distributor

Mfd. by: **WINSLOW SCALE COMPANY**
P. O. Box 1198 Terre Haute, Indiana

TRADING POST

CLASSIFIED ADVERTISING

An advertising inch in the Trading Post is measured 7/8-inch vertically on one column. Space reservations close in the New York office on the 10th of the month preceding publication. Send your classified copy to:

The Trading Post, Contractors & Engineers Monthly
470 Fourth Avenue, New York 16, N. Y.

DECALS

SAVE 25% ON YOUR DECALS
10 DAY DELIVERY

FOR WHEELS, SEND REPAIR, REPAIR, REPAIR
OR DECAL YOU ARE NOW USING

MIRACLE DECAL CO.
734 South Washington
WICHITA, KANSAS

USED TUNNEL EQUIPMENT GOOD CONDITION BARGAIN PRICES

- 120—89 Cu. Ft., 36" Gauge, Sanford Day Drop Bottom Cars
- 2—Model 21 Eimco Muckers, 36" Gauge
- 5—10-Ton Goodman Trolley Locomotives, 36" Gauge, 250 Volt D.C.
- 3—4-Ton Goodman Trolley Locomotives, 36" Gauge, 250 Volt D.C.

MILLER
MACHINERY CO.

P. O. Box 1496 Phone 9-2309
MISSOULA, MONTANA

STOP that WATER

With FORMULA NO. 640

A clear liquid which penetrates 1" or more into concrete, brick, stone, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

WAYNE PRODUCTS CO., OMAHA 3, NEBR.

MARKLEY

ROCK DRILL DUST CONTROL
Portable Units for Rock Drilling in
General Excavation

Mines — Tunnels
Quarries

JAMES H. MARKLEY

80 Snyder Road, Ramsey, N. J.
Tel. Ramsey 9-1179

IMMEDIATE DELIVERY

- 1—Allis-Chalmers Model HD7W tractor w/ Gar Wood Bulldozer.

- 1—Allis-Chalmers Model B tractor with mower.

- 1—"Caterpillar" Model 212 motor grader.

- 1—Bros Model SG-55 skid mounted steam generator.

- 1—Allis-Chalmers Model HD10W with Baker Hydraulic Bulldozer.

- 1—LeTourneau 3 1/2 cu. yd. scraper. Very clean.

- 1—Novo traffic line marker.

- 1—Titan chain saw.

- 1—Adams 414 Tandem drive motor grader, like new.

- 1—Caterpillar D6 with inside mounted hydraulic dozer.

ILLINOIS ROAD EQUIPMENT CO.

1310 East Jefferson Street
SPRINGFIELD, ILLINOIS
Phone 2-7709



FOR SALE

D-8 Tractor, 8R4417 with LaPlant-Choate hydraulic Bulldozer, 5900 hrs. guaranteed, \$10,500. Also LeTourneau Model K, 12 yd. struck pan with 3 extra tires, \$2,000.

NORTON CONSTRUCTION CO.
Norton, Virginia

REMEMBER

Sell or Buy Used Equipment.
Acquire experienced help.
Send your copy to

The Trading Post

Contractors & Engineers Monthly
470 Fourth Ave., New York 16, N. Y.

INDEX TO ADVERTISERS

Acrow, Inc.	37	Le Tourneau, Inc., R. G.	112
Aetna Casualty & Surety Co.	75	Link-Belt Speeder Corp.	29
All-Purpose Spreader Co.	106	Littleford Bros., Inc.	94
Allis-Chalmers Tractor Div.	56, 57	Lombard Governor Corp.	8, 34
American Bosch Corp.	42, 43	Lug-All Co.	88
American Hoist & Derrick Co.	23, 59		
American Manganese Steel Div.	67		
Arrow Tools, Inc.	109	Madsen Iron Works, Inc.	17
Austin-Western Co.	71	Maintenance Engineering Co.	78
		Mall Tool Co.	99
Bachtold Brothers, Inc.	81	Manco Mfg. Co.	100
Baker Mfg. Co.	48	Marlow Pumps	54
Baldwin-Lima-Hamilton Corp.	59	Martin Machine Co.	50
Barber-Greene Co.	98	Marvel Equip. Corp.	30
Barco Mfg. Co.	18	Master Vibrator Co.	64
Bee Line Mfg. Co.	27	McConaughay, K. E.	58
Bethlehem Steel Co.	107	McKeirnan-Terry Corp.	10
Bin-Dicator Co.	90	McKinney Drilling Co.	88
Birmingham Mfg. Co., Inc.	21	McKissick Prod. Corp.	40
Blum Co., Inc., Julius	73	Messenger, Frank D.	16
Briggs & Stratton Corp.	66	Michelin Tire Corp.	33
Bucyrus-Erie Co.	22	Mid-Continent Tube Service	26
Bucyrus-Erie Hydrocrane Div.	93	Miller Research Engineers	88
Buda Co.	82	Miracle Decal Co.	111
		Morin Mfg. Co., Inc.	86
Calif. Welding & Blacksmith Shop, Inc.	64	National Business Publications, Inc.	108
Campbell Detachable Cab Co.	29	National Implement Co.	83
Canton Cast Products Co.	20		
Caterpillar Tractor Co.	9	Ohler Machinery Co.	23
Celotex Corp.	35	Oliver Corp.	80
Chevrolet Motor Div. GMC	87	Omaha Standard Body Corp.	69
Chicago Pneumatic Tool Co.	86	Overman Mfg. Co., I. J.	99
Chipman Chemical Co., Inc.	80	Owen Bucket Co.	70
Chrysler Corp., Industrial Engine Div.	38, 39		
Concrete Surfacing Machinery Co.	50		
Construction Machinery Cos.	40	Parsons Co.	61
Cutcrete Corp.	107	Philadelphia Textile Finishers, Inc.	32
		Pitman Mfg. Co.	26
Demo-Canon Engineering & Mfg. Co., Inc.	79	Portable Electric Tools, Inc.	100
Dectron Co.	85		
Detroit Diesel Engine Div. GMC	47	"Quick-Way" Truck Shovel Co.	41
Diamond Chain Co., Inc.	31	Quinn Wire & Iron Works	98
Diamond Iron Works, Inc.	92		
Dienstfrey, Norbert	97	Republic Rubber Div., Lee Rubber & Tire Corp.	19
Dodge, Div. of Chrysler Corp.	17	Rice Pump & Machine Co.	46
Dorsey Trailers	85	Ridge Tool Co.	78, 79
Dotmar Industries, Inc.	79	Rockford Clutch Div.	96
Drott Mfg. Corp.	76, 77	Roeth Vibrator Co.	49
Dudgeon, Inc., Richard	89	Rogers Iron Works Co.	19
		Rosco Mfg. Co.	110
Eagle Crusher Co., Inc.	90	R. P. B. Corp.	87
Eaton Mfg. Co.	101	Safeway Steel Prod., Inc.	48
Economy Forms Corp.	62	Sasgen Derrick Co.	96
Electric Taper & Equipment Co.	106	Schramm, Inc.	34
Ellis & Ford Mfg. Co.	7	Seaman Motors, Inc.	27
Embury Mfg. Co.	35	Servicised Prod. Corp.	110
Empire Development Co.	66	Simplicity System Co.	21
Essick Mfg. Co.	26	Slope Meter Co.	51
Euclid Road Machinery Co.	15	Smith Engineering Works	73
		Sonoco Products Co.	88
Firestone Tire & Rubber Co.	6	Sprague & Henwood, Inc.	31
Fisher Research Lab., Inc.	68	Standard Oil Co., Indiana	83
Flexible Steel Lacing Co.	110	Standard Steel Works	90
Foote Co., Inc.	95	Sterling Wheelbarrow Co.	58
Ford Motor Co., Industrial & Marine Engine Div.	51	Stoody Co.	7
Foundation Equipment Corp.	22	Straub Mfg. Co., Inc.	81
Frank Mfg. Co., Inc.	91	Stulz-Sickles Co.	36
Frederick Iron & Steel, Inc.	82	Swenson Spreader & Mfg. Co.	37
Fulton Bag & Cotton Mills	72	Symons Clamp & Mfg. Co.	95
Gar-Bro Mfg. Co.	36	Templeton, Kenly & Co.	24
Giles Drilling Corp.	101	Texas Asphalt	3
Gledhill Road Machinery Co.	26	Texas Lubricants	12, 13
Goodrich Co., B. F.	25	Thew Shovel Co.	55
Gorman-Rupp Co.	24	Thurman Machine Co.	40
Grace Mfg. Co., W. E.	109	Tilden Tool Mfg. Co.	92
Griffin Wellpoint Corp.	48	Timken Roller Bearing Co.	49
Gurley, W. & L. E.	30	Torrington Co.	98
		Trackson Co.	16
Harnischfeger Corp.	91	Transport Trailers, Inc.	70
Hayward Co.	10	Tri-Line Co.	94
Heltzel Steel Form & Iron Co.	99	Tulsa Winch Div.	74
Hendrix Mfg. Co., Inc.	89		
Hewitt-Robins, Inc.	20	Ulrich Products Corp.	8
Highway Equipment Co., Inc.	54	Union Wire Rope Corp.	44, 45
Horn Co., Inc., A. C.	97	United States Rubber Co.	32
Hotel Strand	36	United States Safety Service Co.	106
Hough Co., Frank G.	11	Universal Engineering Corp.	65
Huber Mfg. Co.	68		
International Harvester Co., Indus. Power Div.	52, 53	Van Brush Mfg. Co.	109
Interstate Bedding Co.	96	Vibro-Plus Products, Inc.	72
Iowa Mfg. Co.	104, 105	Vulcan Iron Works	109
Ivington Form & Tank Corp.	6	Vulcan Tool Mfg. Co.	41
Jackson Mfg. Co.	66	Warren Foundry & Pipe Corp.	78
Jaeger Machine Co.	58	Warsop Power Tools, Inc.	70
Jahn Trailer Div., Pressed Steel Car Co., Inc.	72	Watson-Stillman Co.	18
Johnson Co., C. S.	61	Waukesha Motor Co.	75
		Wellman Engineering Co.	96
Kingsdown Cable & Wire Co.	94	Wellman Co., S. K.	69
Koehring Co.	60, 61	White Mfg. Co.	108
Kwik-Mix Co.	61	Whiteman Mfg. Co.	14
		Whitestown Trencher Co., Inc.	36
Laclede Steel Co.	20	Wickwire Spencer Steel Div.	46
LaPlant-Choate Mfg. Co., Inc.	63	Williams Form Engineering Corp.	25
LeBus Rotary Tool Works, Inc.	74	Winpower Mfg. Co.	67
		Winslow Scale Co.	111
		Worthington Corp., Construction Equip. Div.	62
		Wyandott Chemicals Corp.	74

Summer dirtmover and WINTER snow plow



On typical road job, regrading County Trunk "F" near Weyerhaeuser, Tournapull spread 66 pay yds. of hardpan sandy loam and gravel hourly on 500' one-way haul. Loads with RD-7 pusher averaged 6 yds. During summer, unit also placed sand lift, removed blacktop, spread surfacing on other Rusk County roads besides handling scores of widely-scattered odd jobs for individuals and townships.

gives year-round service to Wisconsin County

Rusk County Highway Dept., Ladysmith, Wisconsin, keeps this 7-yd. D Tournapull busy the year-round. During the dirtmoving season, it works on road jobs both as a self-loading tool and with a small pusher. In winter, equipped with a LeTourneau 9' V-Plow (illustrated) it speeds county-wide snow removal. Here's a report from Highway Commissioner Harold Iverson on its cold weather operation:

"We use our D Tournapull mostly for plowing out farm driveways," Iverson says. "Clearing and widening the average 200 to 250' driveway takes less than 3 minutes with this rig as compared to 10 to 15 minutes with a 10-ton, all-wheel-drive truck and longer with a motor patrol. I'd say we clear at least 2 to 3 times as

many driveways in a day with the 'D' as we do with a truck. For example, one day right after a heavy storm, the 'D' plowed out 56 driveways over 30 miles of country roads. A truck would have cleared 15, maybe 20.

"The biggest advantage of the D Tournapull is its maneuverability. You can turn it around within its own length. You can't get stuck! With a truck you have to line up your wheels very carefully before starting to plow a driveway so you don't fall into a culvert . . . with a Tournapull, you just turn on the run and drive ahead. Tournapull operator also has a clear view of the plow blade which speeds his work considerably."

If you want a scraper which cleans up your snow removal chores in a hurry, better look into this D Tournapull. It is the only scraper unit on the market which is both maneuverable enough (90° turns within 12' 9" radius) and fast enough (28 m.p.h.) to effectively plow snow. Ask your nearest LeTourneau Distributor for all the facts.



R. G. LeTOURNEAU, INC., Peoria, Illinois
HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

Tournapull—Trademark Reg. U. S. Pat. Off. S-23-H-a

TIME STUDY

Clearing Driveways

Snow crusted and drifted 6" to 2' deep. Ground soft and wet. Temperature slightly above freezing.

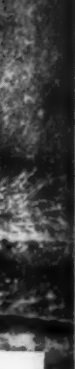
Length of Driveway	Time to Plow*	
250'	1 min.	35 sec.
200'	2 min.	5 sec.
200'	1 min.	30 sec.

*Includes turn and stop at entrance, pass in, turn around at barn, pass out to widen.

2

W

nk "p"
y yds.
n 500'
eraged
nd lift,
r Rusk
widely-
nships.



S

T

a